The Builder.

Vol. XXXV. No. 1813. Saturday, November 3, 1877.

ILLUSTRATIONS.

The New Exchange, Vienna.—Herr Th. Ritter von Hanson, Architect 1104
The New Grecian Theatre, City-road (Plan, 1107).—Mr. J. T. Robinson, Architect 1105

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The Architecture of Lighthouses.

LIGHTHOUSE architecture has very generally been entrusted of late to the engineer rather than to the architect. No doubt, however, can be thrown upon the statement that the problem to be solved is for the most part purely architectural. The first question raised is necessarily that of site. The reasons for erecting a lighthouse in any particular spot are indicated by Nature herself. A shore-light may have two distinct meanings. It may be a beacon, to warn from danger, or a sign of invitation to enter a place of safety. Lighthouses of the first order, however, are rather to be regarded as topographical land-marks. They are usually placed on capes or headlands, and indicate, for a distance of from ten to thirty marine leagues, the general outline and configuration of a coast. From this first order of distinct lights the importance of the signals in question descends to that of lights of the second, third, fourth, and fifth orders,—the last being signals placed on shoals or sand-banks, or on piers at the entrance of a port for the guidance of mariners at the very moment of coming into harbour.

The selection of site is always the first care of the architect. In regarding the site of a lighthouse his skill must be aided by the experience of the sailor and of the marine surveyor. Attention must next be turned to that of the preparation of the foundation. For distant lights this is usually a simple matter. In some cases, on the contrary, the utmost skill of both the architect and the engineer is taxed in order to provide an unassailable security for the base of a tower. This is especially the case when the light is intended to serve for a beacon or warning to ships near at hand, as well as to form a distinct light to indicate the bearing of a coast. Such was the case with that dangerous rocky shoal which lies in the chops of the Channel, about fourteen miles to the south-west of Plymouth Roads. A small point of rock alone appeared above the water; the rest of the shoal, stretching some 180 yards from north to south, is always covered by the sea. This rock is the first obstacle encountered by the heavy rolling waves of the Atlantic, and lies in the most direct course for an inward bound vessel. From this visible point, fretted by the waves, the rock descends almost perpendicularly to a depth of from 30 to 65 fathoms. The result of this opposition of a vertical submarine wall is to throw the incoming waves, when urged by any considerable wind, with a prodigious leap into the air. A height of from 150 ft. to 200 ft. is said to be at times attained. It was the construction on this unusually dangerous and exposed situation of the famous Eddystone Lighthouse, by Smeaton, the engineer, which seems to have secured to his profession, thus far, something of a monopoly of the construction of lighthouses.

In old times, however, the *Phari*, or light-towers, were among the most famous of the works of the architect. The name of Apollodorus, the famous architect of the Emperor Trajan, is yet associated with the port, breakwater, and Pharos of Civita Vecchia. The word *Pharos*, by which name so many lighthouses are now called, especially by the French, is of Egyptian origin. It was derived from the Island of Pharos, on which the famous light-tower of Alexandria was built. First given to the tower in question, it was thence imposed on similar structures. Such, at least, is held to be the force of the line of Statius,—

"Lumina nocturnæ tollit Pharus æmula lunæ."

The classical scholar will observe that the quantity of the word *Pharos*, as determined by this line, disposes of the derivation which has been sometime proposed from the Greek verb, meaning to shine.

This famous tower was of a quadrangular form. It rose in the midst of an *enceinte* of 220 yards on each side, containing accommodation for a garrison. It was situated at the eastern angle of the new port of Alexandria, in a line with the point called Pharaglione. It was commenced under the reign of Ptolemy Soter (B.C. 324 to 285), and completed under his successor, Ptolemy Philadelphus B.C. 285 to 247). Its architect was Sostratus of Cnidus; and it bore an inscription dedicatory to the gods protectors of mariners. The legend is to the effect that the name of Ptolemy alone appeared over the gate of the tower when first completed. This commemoration, however, was made in plaster; on the subsequent decay of which the name of Sostratus appeared, graven in marble. The height of the tower is stated at a little more than 150 ft. The structure has been represented as a Doric base, with columns and pilasters, surmounted by seven blocks of masonry, decreasing in size, each finished with a projecting cornice. On the top of the whole an immense fire was kept burning by night, which was visible at sea twenty marine leagues off. The interior was chambered, and the position of the staircase was indicated by that of the windows. The Arab writer, Abulfeda, speaks of this Pharos as existing in his time, the thirteenth century. It has been described also by Edrisi, who lived at the commencement of the twelfth century. It ranked among the seven wonders of the world. Few vestiges can now be traced of this famous building. The modern Pharos of Alexandria is a new tower erected at another point.

While the Pharos of Alexandria is the most famous lighthouse of antiquity, it is not the most ancient. On the promontory of Sigæum, in the Troad, a lighthouse is said to have existed 650 years B.C., which served as a landmark by day, as well as for a beacon at night. And three centuries or more earlier than this, the vessels of the Greeks, returning from the siege of Troy, are said to have been lured on to shoals near the island of Negroponte by fires lighted by the King of Eubœa with that design.

Another of the famous seven wonders of the world was the Pharos of Rhodes. This was a bronze statue, of upwards of 100 ft. in height, according to Pliny, dedicated to Apollo. It stood astride on two blocks of masonry, which formed the entrance to the port of Rhodes; and held aloft a sort of censer, in its right hand, in which a beacon fire was kept alight by night. This colossus was erected by the citizens of Rhodes, in memory of the siege sustained against Demetrius, king of Macedon. It is said to have been actually constructed of masonry, covered with metal plates. It was overthrown by a violent earthquake in the year 224 A.D.

A lofty and very ancient tower looks down upon the Atlantic Ocean from the entrance of the port of Corunna, in Spain. It is called the Pillar of Hercules; and it is thought that the name Corunna is a corruption of the word "columna." By some writers the origin of this tower is attributed to the Carthaginians; by others to Caius Servius Lupus, who dedicated it to Mars. It was restored by Julius Cæsar; and again restored by Trajan. Its architectural form betrays an origin of a very remote date. There is a tradition that it was erected by an early king of Spain, in heroic times.

At Ravenna a large square tower which stands out from the side walls of the Church of Santa Maria in Porta Fuori is now used as a campanile or bell-tower. It is said to have formerly been the Pharos of the port which Augustus constructed at this point. In the fifth century the silting up of the Adriatic littoral (which is now threatening the destruction of the lagoon of Chioggia) had so obliterated the port of Augustus that its site was converted into gardens.

The Pharos of Boulogne is one of the most ancient in France. It was erected by Caligula (A.D. 38–41), on his expedition into Gaul, according to Suetonius. For many ages this tower was known by the name of the *Turris ardens*. Its base was octagonal, each side measuring eight mètres, according to the design given by Montfaucon. It consisted of twelve stories, each smaller than the one below it, and each surmounted with a cornice. In the year 807, Charlemagne ascended this tower in order to review his army, and ordered that the long-extinguished beacon should be re-kindled. Various coloured stones, brown, red, and yellow, were employed in constructing the different parts of this Pharos, with the aim of rendering it a more strikingly visible object. In 1545 the English made use of the tower as a fortress. Their works seem to have interfered with the solidity of the foundations, for in 1644 the tower fell.

Under Claudius, whose tenure of empire lasted from A.D. 41 to A.D. 54, a tower was erected, according to Suetonius and Dion Cassius, at Ostia, in imitation of the Pharos of Alexandra.

In the fifteenth century it was visited and described by Piccolomini, who was afterwards Pope, under the name of Pius II., from 1458 to 1464. From a bas-relief in the possession of Prince Torlonia, it is deduced that this tower was built, as that at Boulogne was previously described to have been, in successively diminishing planes or stories, with a fire kindled on the top. The elevation, however, which is produced by Signor Cialdi, in his learned memoir on light-houses, from which very much of our information is derived, is that of three towers, of diminishing sizes, standing one on another, with a thick short column on the top supporting the beacon or bonfire. The deposits brought down by the Tiber have long filled up the Claudian port of Ostia; and the careful measurements which have been made by the Italian engineers of the position of the shore line at successive historic epochs, indicate that a geological undulation, similar to that witnessed by the famous temple of *Serapis*, at Pozzuoli, on the Bay of Naples, has occurred at the mouth of the Tiber.

The restoration of the lighthouse built by the Emperor Trajan at Civita Vecchia has been effected by the present Pope, Pius IX. The architect, Apollodorus, by Trajan's command, designed and carried out a commodious port at Civita Vecchia. A breakwater, or island, was placed before the entrance of the harbour, to protect it from the waves. Two towers were erected on this work, one of which sustained a beacon. In the Itinerarium, a journey through Etruria, of Numazianus, who lived in the fourth and fifth centuries of our era, the double towers and double entrance of the port are commemorated in hexameter verse. Neglect, and the action of the sea, gradually filled the port; and in the popedom of Gregory IV. (A.D. 828–844) it is spoken of as having been intentionally ruined, for fear of being seized by the Saracens, and used by them as a naval centre. Under Urban VIII. it was repaired and re-opened. In 1616, Paul V., among other improvements, rebuilt the existing eastward tower. The westward towers were still in ruins at the commencement of the present century. It was commonly called Il Marzocco. Pope Gregory XVI. reared a small fort on its ruins, but no better signal was offered to navigators than a light hoisted on a mast. In 1860 Pius IX. consulted the illustrious astronomer Padre A. Secchi as to the lighthouse, and the present tower was built, and furnished with a Fresnel illuminating apparatus of the second order. The tower is of stone, cylindrical in form, and carries a lantern 110 ft. above the level of the sea. The works were executed by the engineer Chevalier Giovanni Minti.

The Cordovan Pharos is a tower of admirable construction, reared on a rock at the mouth of the Gironde. The name is taken from that of an architect, who, about A.D. 830, built a tower in the island of Andros. Both town and island were engulphed by the sea in the earthquake of 1427. The present town stands on a shoal, seaward of the former Pharos, which is covered with three mètres of water at high tides. It was commenced in 1545 by the Parisian architect, Louis de Foix, by command of King Henry II. It was continued by Henry IV. in 1601, and finished under Louis XIV. in 1665. In 1778 the upper part of the tower was removed, and replaced by a frustrum of a cone, rising to 78 mètres from the foundations, by the architect Thenlere. The tower is composed of a series of galleries rising one above another, ornamented with pilasters and friezes, and gradually diminishing in dimension. From the second story a fine staircase conducts to the top of the cone. The latter is divided into four stages, on the last of which the lanthorn is placed. A wall surrounds the base, the diameter on the plan being 43 mètres. Within this are situated the rooms of the guardians, almost in the form of casemates. It is claimed for this Pharos that it is the finest edifice of the kind in the world. In 1790 a reverberating light was placed on this tower. In 1854 a dioptric Fresnel apparatus was substituted, with a light of the first order, eclipsing from minute to minute.

The beautiful Torre del Capo at Genoa is well known to all familiar with that picturesque Italian port. Originally built on the promontory of San Berrique in 1139; it was first illuminated in 1326. It was removed in 1512, and rebuilt by the Republic, in 1643. It is a square tower, in two stories, with battlemented terraces, the lower portion nine mètres square, the upper seven. Rising from a rock 42½ mètres above the sea, it carries its light at the height of 118·5 mètres above the water. In 1841 it was fitted with a Fresnel lenticular apparatus of the first order. For beauty and elegance of structure, this historic Pharos is one of the first in existence.

The Pharos of Meloria was built by the Pisans in 1154. It indicated the direction to be taken by ships making for Portopisano, and gave warning of a dangerous sand-bank. This tower was destroyed by Charles of Anjou in 1267, by the Genoese in 1287, and by the Guelfs in 1290. Having determined to abandon Meloria, the Pisans erected, in 1304, the lighthouse which still exists near Leghorn. It is celebrated by Petrarch. It stands near the entrance of the harbour, to the south of the new curvilinear mole; and rises 47 mètres above the level of the sea. It is built of stone, in the form of two battlemented cylinders, surrounded at the base by a polygonal inclosure of thirteen sides.

On the shore extending from the extreme promontory of Istria as far as Chioggia, no lighthouse was in existence in 1818. In that year the flame was kindled on the Pharos of Salvore, which was built by the architect Nobili, on the Punta delle Mosche, twenty Italian miles from Trieste, and five from Pisano. Here occurred the first instance of the use of gas for lighthouse purposes. The tower is cylindrical, of wrought stone work, with a cornice above, and a quadrangular base. Its diameter is 5 mètres, and the diameter of the cornice is 6·3 mètres. An internal staircase leads up to the octagonal lantern, 4·4 mètres high, and 3·8 mètres in diampter, at the height of 35·5 mètres above the level of the sea. The apartments for the attendants are in the square base of the tower.

The example followed more or less directly by the architect Nobili, as well as by George Stephenson in his plans for the Bell Rock Lighthouse, built by him in 1808, at Inchcape, near Arbroath, was no doubt the great work of Smeaton before referred to, the Eddystone Lighthouse. The wonderful triumph attained at this most difficult and dangerous spot was without precedent among any of those ancient and famous Phari to which we have referred. The first attempt to raise a light-house to give warning of this destructive shoal was made by Winstanley in 1696. A base of stone, 15 ft. in diameter, and 12 ft. high, was built on the rock and fastened to it with iron cramps. On that was built the tower, 70 ft. high to the vane. On the night of the 14th November, 1698, the light was first kindled. As the waves broke over the lantern at this height, an addition of 20 ft. of masonry, and of 40 ft. of metal work, was subsequently made, the wall of the tower being made a yard thicker at the same time. In November, 1703, it became evident that repair was necessary. Winstanley betook himself to the tower, expressing his confidence in its ability to withstand the utmost fury of the elements. On the night of the 26th of that month a fearful storm occurred, and the lighthouse had entirely disappeared by the morning. It is said that on the same night the model of the tower, which the builder had kept in his house in Littlebury, in Essex, fell down and broke into fragments.

In consideration of the great importance of the case to navigation, Parliament, in 1706, authorised the imposition of a light due on the vessels frequenting this part of the Channel, and a contract for a new lighthouse was made. A silk merchant, of the name of Rudyerd, undertook the erection. His plan was that of a plain wooden cone, lined with masonry, the idea being at the same time to provide weight for stability, and to oppose a smooth surface to the impinging waves. This tower was 20 ft. in diameter at the base, 14 ft. at the top, and 62 ft. high. The lantern was octagonal, 10 ft. in external diameter, and 9 ft. high. A globe of 32 in. diameter stood on the top of the lantern, at the height of about 90 ft. above the level of the sea. After long and costly work this tower was completed in 1709. On the 2nd of December, 1755, it disappeared in a few hours in a terrible conflagration, the origin of which is unknown. This unexpected destruction, owing to the fury of that element against which the builder had taken no thought to provide, furnishes a most instructive lesson as to the material necessary to employ for similar structures.

In 1756 Smeaton for the first time visited the Eddystone rock. The idea of the form to be given to the building he took from the trunk of an oak, as that provision which Nature herself had made for the most successful resistance to the play of the wind. A model made on this idea was approved by the Trinity House and by the Government, and Smeaton commenced the work in the August of 1757. The stone which he selected was the granite of Hingstone Downs, fifteen miles from Plymouth, for the exterior, Portland stone for the interior, and a mixture of Aberthaw lime and Roman pozzolana for cement. The stones at the base of the tower were bird's-mouthed and dove-tailed into each other and into the rock, so as to form an absolutely homogeneous structure. From August 27th to September 14th, 167 hours were employed in filling in the foundations. The utmost care was taken in the fitting and bonding of the stone, each stone being exactly worked, and fitted to those by which it was to be set, on shore, before sending to the tower. By August 8th, 1758, the work had been raised to the height of 32 ft., and the first store-room contrived in the tower was complete. On March 21st, 1759, Smeaton visited the spot, and found everything perfectly uninjured. From July 5th to August 7th, in that year, another 34 ft. had been added to the height. The metal-work of the lantern had been prepared under Smeaton's inspection in London, and the ball which formed the summit of the structure was fixed by his own hands at 92 ft. above the level of the sea. The solid base rose for 16 ft., at which height a door gave access to the internal spiral staircase.

On the night of the 16th of October, three years, ten months, and sixteen days after the conflagration of the work of Rudyerd, the light was kindled in the lantern of Smeaton's Eddystone lighthouse. It has ever since given uninterrupted warning of the dangerous vicinity. Many violent storms have burst over it, especially that of January, 1762; but it has remained uninjured, although a distinct oscillation is felt in the lantern in violent winds. The calculation of the height of the waves that dash over this noble work makes them rise to the height of 162 ft. above the level of the sea, giving a column of water containing from two thousand to three thousand metric tons. The necessity for the utmost exactitude in the joints of the masonry is thus apparent. When water exerts a battering force of this nature, its effect, if it gets under or within a building, is irresistible, while it breaks into foam against a smooth and curved surface.

On the 24th October, Sir William Thomson, professor of natural history in the University of Glasgow, gave a lecture before the Shipmasters' Society on the subject of lighthouses; the point to which he chiefly directed attention, however, being not their architectural structure, but the character of their illumination. Ninety per cent. of our local lights are fixed; and the danger that they may be mistaken is said by the lecturer to be far greater than in the case of revolving or eclipsing lights. An eclipse, however, of from 50 to 60 seconds is far too long in dirty weather, and the eye may readily lose the point of light before its bearing has been correctly taken. The Craigmoor light, in the Firth of Clyde, has been fitted with a light of Sir William Thomson's own arrangement,—a long and a short eclipse alternate hours, and there is thus a short pause, giving sixteen seconds of unbroken light. This combination of flashes is made to signify the letter C, according to the Morse alphabet, a very beautiful application of one of the latest improvements in telegraphy.

OVER-DECORATION.

It has been often suggested in our columns that the external decoration of buildings has been overdone since the Gothic revival; that as much carved foliage, for instance, is found on a modern hotel as would have sufficed for half a dozen Mediæval cathedrals. It is the natural tendency of revivals to go to excess in the use of things good in themselves, and this kind of excess in decoration, which in external architecture people are beginning to recognise as a mistake, and as involving a certain degree of bad taste, seems to be now extending itself to interior decoration.

We do not so much refer now to the decoration of churches; the question of colour in modern churches, and in relation to Mediæval architecture, has been pretty fully discussed, and it seems likely that the taste which would make a church interior one blaze of strong colouring, on mouldings and surfaces alike, will be moderated in future buildings of this kind. The more recent movement in architectural revival has had more direct reference to domestic architecture, and has perhaps affected the public taste in regard to interiors even more than exteriors;

and the excess which is characteristic of revival seems to be displayed again in the new style of decorating the interiors of private dwellings. From being content either with very little decoration, or with decoration left entirely to the conventional tastes of paperhangers and carpet manufacturers, we have now arrived at the point where the house-decorator takes rank as an artist: from a period (not very long since) when people were content with white ceilings, a skirting-board, and a Turkey carpet, to produce a good effect, we have come lately, almost at one bound, to a condition of public taste which renders it almost imperative that every wall and every ceiling in a house should have its own decoration, if the owners are to pass for persons of taste and perception in these matters.

It is very gratifying to see so much more attention given to making dwellings rich and harmonious in internal effect: we have little hesitation in preferring even the extreme of decoration to the extreme of bareness, and none of our readers would expect otherwise from us. But we think a word of caution is required as to the over-use of decoration, which tends sometimes to defeat its own end.

It is not sufficiently borne in mind that one of the great sources of decorative effect is contrast; not only contrast of colour, but contrast between plain surfaces and decorated surfaces. At present there seems to be too great a tendency to make every available surface throughout a house an occasion for decoration of a more or less elaborate description: to let nothing alone. There is a sense of a profusion about a house thus treated which is rich in effect, no doubt, but which also becomes a little cloying to the eye and the mind. We find in a dwelling thus treated designs on the window-glass, and over all the walls and ceilings of every room; the doors have conventional vegetation in bright colours over-running the panels; decorative carpets are on the floors, of many hues; decorative china is placed in every available place; and each piece of furniture constitutes a separate study in decoration. The only bare space to be seen is probably the strip of dark-varnished floor which the present fashion demands around the margin of the rooms. It is really, perhaps, fitting that the floor on which we tread should be the plain part of the room, where it is shown; but it is rather curious to notice how colour seems to have flown from the floor to the ceiling. Formerly it was *de rigueur* to hide the whole of the flooring-boards with a fine carpet; and then the ceiling was left white. Now you may show a good deal of plain black or dark surface on the floor, if you like, but you must on no account leave any other part without ornament.

The result is not unfrequently to produce a spotty effect and a want of repose which is at variance with the best taste in decoration. It is possible to carry out this kind of universal decoration to a good and fine result when there are sufficient funds and sufficient time at disposal to allow of that amount of thought being given to the work which would render every part of it a separate study. But it is rarely that this can be the case. And when it is not so, however praiseworthy may be the execution and the general taste displayed in the decorations, it is hardly possible to avoid a certain impression of mechanical repetition, or at least of merely covering spaces with ornament because they are there and afford room for ornament. We see a certain style of decorative diaper on the staircase wall, and we find something of the same kind over the ceiling of the bed-room, and so on wherever the eye is turned; and in such a case the ornament must necessarily be of a kind which has little real meaning or fresh invention in it; it must be something which can be readily executed over a large expanse of wall or ceiling, or it would become extravagant in regard to cost and time.

What we wish to suggest is that a better effect in regard to artistic treatment and to general good taste, would probably be obtained by restricting the ornamental treatment of a house, and of its separate rooms, to certain salient portions, and bestowing on these so much thought as would give a distinct meaning and interest to the ornament employed. The mere diversification of surfaces by diaper of various kinds, a very good means of producing rich effect in certain parts, becomes wearisome to the eye when continually repeated. Unless a room is to be decorated on an unusually rich scheme, and regardless of cost, it would generally be best to leave the surbase or dado plain, or with the very simplest ornament, so as to give the greater effect to the ornamented surface over it. There is even much to be said in favour of flat tints over a considerable portion of a wall, especially where pictures are to be hung; always supposing that the tint is one agreeable to the eye in itself; and such a scheme gives the more effect to the pictures and to anything like an ornamental frieze that may be introduced as a crowning decoration. There is something to be said also in the way of a check upon the elaboration to which ceiling decoration has arrived, which is sometimes found to be practically injurious to the lighting of a room. The whitened ceiling which was formerly the regular finish of a room was a very bald contrast to the Turkey carpet below, certainly, but it had the effect of improving the lighting of a room by its reflecting power. We have experienced in rooms where the ceiling was covered with a design in dark tints a most decided deficiency in this respect, which is not made any the better when the windows are partially or wholly occupied by stained glass. An elaborate ceiling in a large public room, where some part of it can always be seen at a convenient angle, is another thing; but in a private room of ordinary size people are seldom occupied in looking at the ceiling, and the darkening of the room by an elaborate design in heavy colours is an unpractical employment of decoration, and does not help the general effect of the room. An expanse of light tint, with a decorative border, seems more in keeping; and there is a good deal to be said for white plaster when used in combination with wood framing, to give a constructive expression to it and break up the surface. It should sometimes be remembered, too, that windows, after all, are really meant to look through; except in cases when, in a street house in town, the look-out is so uninteresting that an ornamental coloured design on the window is manifestly preferable to anything that could be seen through it. The upper portion of a window, above the eye, may very well be made the subject of decorative treatment, and may thus serve to give a tempered light to the upper portion of the room; but in regard to the main portion of a window its primary object is to let in light and to give an outlook on the prospect: and too much of tracery-bar work and coloured design interposed gives an artificial and confined feeling to a dwelling. The overcrowding of a room with curiosities and knick-knacks is a point to which attention has been recently called in a paper printed in this journal: in this, as in other sources of decorative effect, a special interest and artistic value in each special object, rather than a mere effect of profusion, should be aimed at.

Two words in regard to what may be called the artistic *morale* of the subject. The fashion of over-decoration is somewhat characteristically reflected in our theatres. In the mounting of Lord Lytton's posthumous play, "The House of Darnley," for instance, at present playing at the Court Theatre, the decoration of the various interiors in which the action goes on is carried to a degree of elaboration and realism which certainly strikes the audience, and produces a round of applause each time the curtain rises on a new scene; and the applause in a sense is quite deserved, for the effects of the scenes are very rich and artistic. But all this seems quite out of proportion to the requirements of the occasion, and to the quality of some at least of the acting; and we cannot help remembering, too, that this elaboration of scenic effect could only be made to pay on the "long-run" system, the system which is vitiating both the art of acting and the public taste for it, reducing it to the level of a mechanical kind of lesson wearily gone through after the life and spirit of the acting has been deadened by endless repetitions.

The other reflection one cannot help making is, that there is a degree of bad taste involved in this very attempt at exhibiting decoration in every possible corner of a house: a fact which almost serves to set some really refined people, who have a righteous horror of show and pretence, against the very idea of artistic furniture, as a kind of mark of the *parvenu*. A clever contemporary lady novelist,* in sketching the character and habits of a family of old English gentlepeople, in contrast with those of the newcomers in their neighbourhood, actually mentions, as a characteristic of the former, their indifference to the decorative tastes of their neighbours of the manufacturing aristocracy. Lady —— (we forget at the moment the name of the character in the story) took a sort of pride in being content with her rather small, unpretending house, her carpets and furniture a little worn, and in no particular style, and in letting her visitors feel that she at least was not dependent on furniture and china of the newest taste to uphold her gentility. And this is a true expression of the feeling of some English ladies in real life,—a feeling which it is worth while to take into account. It is so very easy to be vulgar when you carry anything to excess, even if it be in the direction of "taste."

ART AND ARCHITECTURE IN THE PAST AND THE PRESENT.

CAUSES OF DIFFERENCE.

We have without doubt, says an acute critic in the leading journal, assured to ourselves in this country "life and the means of living," but "have we paid the same attention to the ends which make life desirable?" We spend truly without stint on our public services, army and navy,—can we say the same of our galleries and museums? If we compare Manchester and Birmingham, Liverpool and Glasgow, with Florence and Dresden, Nuremberg and Venice, we cannot but feel sadly that the art of acquiring wealth is not the same as the art of spending it. Well, indeed, may we ask these questions, for how is it that such a city as Manchester, or such a city as Liverpool, with their multitude of trades and manufactures, and commerce with the whole earth (for where is there on the whole globe a spot on which Manchester goods are not to be found?) do not more than rival the famous trades-city of Venice? Venice, at its very best, was but a small place as compared with Liverpool, and its wealth could have been but a fraction of that of either of the towns named; yet who would or could dream of comparing the art results of the older cities with the modern ones? No man can do this, even for a moment; instinctive feeling compels him to forbear doing so,—yet why should he not? The wealth of old Venice could have been as nothing as compared with that of new Manchester or Birmingham, and art must needs be bought.

The writer goes on to try to solve this knotty problem, and to account for the but too obvious difference between the art and architecture, as seen in old Venice, and in modern Liverpool and Manchester. To praise past times and depreciate our own is an easy task, but the work of real criticism is a matter of no small difficulty. Nothing is to be taken for granted and then built upon as on a secure foundation. The climax of art-action in past days, in this country, was reached without doubt in our great cathedrals; and that we do not build cathedrals, or even chapels, nowadays, as Englishmen once did, there can be no doubt. We do not even attempt it. That the churches and chapels, says the same writer, which the last half-century has produced so rapidly, repeat in wearisome iteration models devised by a cunning which has perished, no one can deny, and no one wishes to be told. But we do care to have a reason for it. What is the reason? Is "commerce" itself, or the commercial spirit now so active all about us, fatal to art-action? This can hardly be, for were not Venice and Genoa, and many other famous towns and cities, fully as "commercial," so far as their size permitted, as either Liverpool or Manchester now are? Is it a shortcoming in religious aspirations, and inspirations, and feelings? All buildings are not devoted to religious purposes, it may be answered, and the old Heathen temples and the great Christian cathedrals may well be compared architecturally and artistically one with the other. The sculptured work on the Parthenon itself, looking at dates and "surroundings," and the circumstances of the several times, may be compared with the sculptures to be found on the walls and towers of the Gothic minsters. The handwriting on the stones of the one is as emphatic as the handwriting on the marble of the other. Religion was certainly never fatal to art; and even when it entirely ignored it, as in the Mosque architecture, there it is. The whole course of the world's architecture shows this beyond doubt. Much might here be said, and, may be, a mystery or two, here and there, solved, or at least made a little less mysterious; but we would content ourselves with remarking simply, that in the

* Mrs. Edwards, in "Archie Lovell."

older architectures, and in the purely Gothic ages, religious aspirations embodied themselves in realistic forms, and what the sculptor of the pictured panel sought to do was to show to others what he himself saw so clearly and without doubt; and what, indeed, to a great extent was to be seen all round and about him. This may seem a little strange to some, but it is wonderful, and certainly useful, to note how the forms, costumes, and surroundings of a scene illustrating even a Scripture story vary with the age in which the work was executed, and how it all takes you into that time, and puts before the eye, not the story or the legend only, but the very circumstances, and architectural surroundings and costume, and even portraiture, of the men and women of the time and day in which it was executed.

Very many other questions we might here ask and propound for solution, but there is certainly one which would seem at first sight at least to answer the question, and to solve the problem. It is the fact of the mechanical turn and very genius of the present age,—at least, here and amidst English-speaking communities. All is mechanism about us, and effort is made in every possible direction to do by and through a machine what the old world were content to do, and did do, by hand, action, and energy. It is wonderful, indeed, to note what is done nowadays by machinery: nought required but to look on; but, perhaps, not so wonderful after all as the work which was accomplished by those who in past days did without it. Note, for example, the very best of masonry,—the lifting and putting together of masses of stone in the construction of a wall, whether "ornamented" or not,—to say nothing of the size of the masses of stone, and the difficulty of lifting and moving such masses in the antique times as compared with the present: we need but to examine, as may be done even in museums, the stone-cutting of the angles and joints, and the fitting together of them. If the sculpture of the Parthenon is a marvel of artistic skill, so most surely is the mere masonry of it, and the putting together and setting out of its constructional walling and cornices and supporting columns. To our minds, this is all but as wonderful as the sculptures themselves and the handwork of Phidias, and is worthy to hold it.

Again, and we would more especially note it, what wonderful things were done by the antique "potters." Here, as in stone and marble work, no great strength was required, and it can hardly be supposed that the hands of the antique worker in clay differed much from those of our own workmen, or that their physical powers varied much from ours. Yet what have they not accomplished! Compare the workmen as we may yet see them through their work, and as that may be done in the British Museum, with that of those who do the work as it is seen in our china and crockery displays of the most costly to the cheapest wares. No one will contend that our wares are stinted for want of appliances, or that anything is needed which money can purchase to facilitate production, or even that effort is lacking for the education of those who actually do the work. It might a little surprise our great firms in this line of work to see the old Etruscan at his simple wheel, and with his rough apparatus; and, may be, they might be as surprised at the "personality" of the man himself, and still more so at the "way" of his work, and may be, more than all, at the fact of his having, so to phrase it, nothing to go by. No better or more instructive lesson is to be learnt by our art-workmen than is to be got by a visit to the Etruscan room of the British Museum; form, outline, colour, drawing, and individuality of inventive skill, are here to be seen; and, though so much of it looks the same, each vase and detail in it is individualised and separate from the rest.

We are sometimes told that to praise past times and depreciate our own age is an easy task, but indiscriminate censure is not criticism. This is without doubt quite true, and to be kept carefully in mind, for when we see how much and how well those who have gone before us did their work in this world, leaving so much to prove their capacity, we are always tempted to attribute it to some actual superiority in the men themselves, and to leave out of the account methods of work and surrounding circumstances and influences. If, says the writer whom we have already quoted from the leading journal, we try to trace the causes which have given great works of art to other ages, and denied them to us, we are lost in a maze of conjecture. But it is consoling to see signs that the fact is only a temporary phenomenon: still, this hope does not solve the problem, nor does it suggest causes of difference between the artistic action and results of the Past and the Present. But that there must have been, as there must still be, causes for such differences, and that such causes, could we but come at them, must need have been, and must still be, all potent, is certain. We will here but venture to name two.

In the first place, we must bear in mind, or rather call as vividly to mind as may be the fact that in past days, no matter where, whether in old Etruria, or refined Athens, or Middle age England, or Germany, or elsewhere, taking any date or generation to make special note of, there was nought in each such locality but the style of art and architecture then and there prevailing. All thought in and spoke one art-language. At Athens it was Greek,—the Greek, say, of the Parthenon; and to work at all as an artist or a workman—and the words were synonymous,—it was a necessity to work in this Greek, and to think in this Greek. A state of things all but impossible to realise to ourselves, or even to imagine, nowadays, when we are surrounded by a very Babel of art tongues. It was the same in Gothic days: the Early English Gothic artist, or workman, had really nothing all round and about him but the Gothic he and others were working at, and in, as an art and architectural language. The Norman, which preceded it, no man dreamed of copying or looking at, but as at an antique, any more than we now think of speaking or writing like Chaucer. It is, indeed, wonderful to note the profound indifference with which the art-workmen of one century seem to have regarded the work of those who immediately preceded them. It is a subject in art yet to be thought out.

We make note here of but one other cause of the distinctive difference between the old art and of that of to-day. It is an important one, and has yet to be mastered: it is difficult to find a term for it sufficiently explanatory. We might term it—the personality, both mentally as well as manually, of the actual workman. In our modern work, as all know, the workman follows the mental lead of another. In the antique work, as in that of Egypt, he must have followed his own. No workman could have cut the animal forms on the black obelisks in the Museum from a drawing.

SUNDERLAND AND ITS TRADE.

When Bunyan's pilgrims were "got out of the wilderness," and saw a town before them, it was like those in our days, for "one commodity is the chief of all" now as then; but in the present age, in the North-country, the resemblance ceases, for all "that is there is sold, or that cometh thither" is heavier than vanity, to the extent that iron ores or their products outweigh it. On Teeside the commodity is iron; on the Wear coal predominates; and on the Tyne there is an amalgam of iron, coal, and chemicals. But rising from the trades so dependent, on the banks of these rivers there has been witnessed a growth of towns without parallel, and the uprisal of industries extensive and varied. Not only is there a revival of life and an extension of old towns, but the bays on the coast have had new ports planted, and at favouring spots new commercial centres have arisen, whilst the bulk of the interior of the country has been dotted with villages. There have been differing ratios in this outgrowth, but possibly the most striking examples of this are found at the seaside, and in some degree one of the most notable of the seaports is the town of Sunderland. It has not had the rapidity of growth of Middlesbrough or West Hartlepool, but the growth has been continued for years in a steadily-progressive manner, and this in spite of the fact that some of the older industries of Sunderland have almost died out, and that its situation has not enabled it to adapt itself to newer industries so completely or so rapidly as some of its neighbours. Still its extensive and varying trades are secure, and the town dependent upon them has continued to increase. It has no early history of note separate from Bishop Wearmouth; so little, indeed, was it noted that in Speed's curious itinerary of the Bishopric of Durham, of about 250 years ago, the name of Sunderland figures on the map, but otherwise it is not deemed worthy of mention. In the twelfth century it figures under the name of South Wearmouth, and it is in much more recent days that it rises into importance as a commercial town under its present name. But springing from the working and shipping of coal, the building of vessels, and the manufacture of glass and of iron, the town has advanced in this century in a ratio very great, as may be gathered from the fact that in 1821 the population of Sunderland and Wearmouth was 31,891; that in 1831 it had grown to 40,735; and that its growth in later decades has been to 53,335 in 1841, to 64,673 in 1851, to 81,534 in 1861, and to 98,242 at the time of the last census. At the last date, 1871, it contained 12,761 houses, and its municipal borough extended over 3,306 acres.

Coal-shipment is unquestionably the first of its trades, and it may indicate the growth of that trade if it be stated that during a considerable portion of last century the coal shipments at the port did not much exceed on the average 65,000 chaldrons yearly; that early this century that amount had risen to nearly ten times the quantity; and that at the present time the shipments of coal and coke are above a million tons and a half yearly to foreign ports, and a similar amount to other British ports, so that over three millions of tons of coals are shipped from the mouth of the Wear yearly. Ship-building ranks next in importance and in fame; for though in this industry the Wear occupies a lower place than the Tyne, yet it was long famous for its clipper ships, and though the days of the wooden walls of old England have passed away, Sunderland contributes largely to the number of the iron merchant fleet. This branch of the trade of the Wear has increased in a most satisfactory manner, as may be judged from the fact that in 1862 the tonnage built was little more than 15,000 tons, and that for some years past the vessels built have averaged from 60,000 to 70,000 tons. This pre-supposes considerable work for marine engineering and other allied industries. The glass works of Sunderland may be next noticed as not only large in extent and in producing capacity, but also famous for the introduction thereat of the rolled plate glass; whilst manufactures of kindred goods,—earthen and other ware,—are to be found on a subsidiary scale. The export trades have been, as may be judged, tolerably well developed at Sunderland; but, up to a recent period, there was comparatively little attention given to the import trades: now, however, this is being remedied, and new industries are being planted and extended on the sides of the Wear. There has been a careful attention to the needs of the port, the provision of increased accommodation, and the improvement and extension of the natural advantages of the river, and the result is seen in increasing commerce, and increasing town prosperity.

The indications of that increase are great and varied; the population of the town, as we have seen, has steadily progressed, and its present rate seems enlarged over those of former decades, whilst that increase is reflected in some things which are perhaps inevitable, but certainly uncreditable. Within less than twenty years the criminality of the town has doubled,—the number of persons proceeded against having risen from 2,807 yearly to between five and six thousand, but the increase is not the greatest in the more serious class of crimes,—drunkenness and common assaults furnishing the great bulk of the cases. How far that crime is or is not contributed to by the 260 public-houses and the 265 beerhouses it is not now needful to inquire; nor need the connexion be attempted to be traced between the numbers and the bulk of the pauperism in the union, of which the town is the chief part,—pauperism, which has very much fluctuated of late, and now includes for that union about 570 indoor and 1,740 outdoor paupers; or, in other words, one person in about 49 or 50 is a pauper! Other and less equivocal facts are found in the growth of the rateable value of the borough, until it is now close upon 320,000*l.*; its building societies are perhaps more numerous than in any other town of similar size, and some of them have princely incomes; and for some years, owing to the carrying out of a town improvement scheme, there has been a gratifying decrease in the death-rate. At the present time that death-rate is very little more than 20; the number of deaths being 2,262 yearly, the births numbering 4,409. Its free library has not yet become so popular as it ought to be, but this is because its housing in the past has not been befitting, and when in the future this condition is improved, it is probable that both free library and museum will better serve their purpose. Its police force is composed of 121 officers. On the rolls of its ele-

mentary schools are the names of 12,926 children, 3,289 being on those of Board schools, but the limited accommodation at the latter is being largely added to. Its infirmary accommodates in a year 1,597 indoor patients, and those treated at their own homes, or prescribed for in the dispensary, make the total 4,572. Finally, it may be said that there is a mass of religious, philanthropic, and social associations, and commercial undertakings, at work in the Wearside town, which in effort, extent, operation, and result may fairly be said to be in every way creditable to the character and enterprise of the people of Sunderland.

This is the present state of the coal-shipping port of North Durham; and from the state of the present the prospects of the future may be taken as brilliant. There is now extension in the town as well as its trade, and the builders find yearly fresh fields and pastures new to cover with streets. The railway communication has for some time been tolerably good, but it has been to some extent marred by the want of a central station, and the consequent distribution of traffic from three small stations dispersed at distances from each other at three points of a triangle. The railway company which serves the whole of the north-east coast, with the exception of one small seaport, is now supplying the deficiency,—a station which shall join the several routes into and from the town. Already, on this junction, there has been spent the sum of 361,778*l.*, and as it is estimated that the further sum of 146,934*l.* will be needed to complete the work, it may be gathered from this that the design is one on no mean scale. It involves the crossing of the Wear with a high-level bridge, the tunnelling under a considerable part of the town and one of the magnificent public parks, the removal of no inconsiderable amount of property, and the construction of a station creditable to the town and to the railway company, and with all these parts of the work considerable progress has been made. On part of the Extension Park it is intended to erect a museum and library also, better befitting the town; there is projected a town-hall, and other buildings of a public nature are in contemplation, and the sects are busy; so that in the constructive trades briskness seems certain in Sunderland. And although the vaster branches of its commerce will feel the ebb and flow of the general trade of the country, there is little fear for its immediate future. It has behind it the vast coal resources of North Durham; its port facilities have not yet reached their maximum; nor have some of its more recent trades attained their full growth. As these grow they develop other fields of industry, and every little rill adds to the force and volume of the general stream. Its position as one of the first of the north-eastern ports, and its prominence in the North in shipbuilding, give assurance also of its future, which is further vouched for by the competent business men and the skilled scientific marine constructors who have in no small degree made the port what it is. Building on the two great northern supports of coal and iron, and adding to these the lighter but still appreciable sources of strength derived from other trades, the industrial future of Sunderland should be marked by the same progression which it has so long known. And as it has learned the lesson taught in plague-stricken times, that more of the care and attention of the rulers of a town should be given to the supervision of a town than had been devoted to Sunderland prior to the cholera outbreak, it is now reaping the fruits of its applied wisdom in the carrying out of the removal of some of the worst of its dwellings,—reaping fruits in the shape of decreased death-rate, improved general health, repute, and appearance. There is yet something to be done in this respect, and there is much to be done before the mass of misery—often drink-engendered—is removed; but the sanitary progress of Sunderland, and its beautification and adornment by the addition of noble parks and stately buildings, have been in recent years more satisfactory than in some other similar towns.

Ventilation of Railway Carriages.—An apparatus, invented by Mr. Birkett, architect, Carlisle, for ventilating railway carriages and travelling post-offices, was on the 25th ult. tested between Carlisle and Lancaster, in the presence of the Mayor of Carlisle, Dr. Barnes, Mr. Williams, engineer of the carriage department of the London and North-Western Railway Company, and Mr. Westmorland, of Liverpool. The experiment was, it is stated, highly successful.

BERLIN AND ITS BUILDINGS.*

The progress made in the construction of public buildings has, if less rapid, certainly been more satisfactory than that of private architecture. Amongst the many public buildings projected, commenced, or completed, may be mentioned the Houses of Parliament of the German Empire, an illustration of which appeared in the *Builder*, the taking in hand of which building has hitherto, unfortunately, been retarded by the delicate question of finding the most suitable site for it. It forms another Law Courts question, of London notoriety. Much remains to be done, for though Berlin is the fourth largest capital of Europe, it is far from taking that rank from a sanitary or architectural point of view which it as such ought to occupy. But this much deserves to be stated, in justice to the spirit prevailing in the German capital, that Berlin is on the brink of great activity being displayed also in that direction.

It is of the greatest importance for the future of Berlin that steps are already being taken for a thorough reform of its obsolete organisation, with a view of sweeping away its many and opposing elements of fiscal and municipal administrations, basing its new institutions upon the principle of self-administration and decentralisation.

(II.) The buildings of Berlin, being the subject proper of the work before us,† necessarily occupy the greater part of the book. The importance of Berlin in the history of modern architecture is not based either upon the number or the splendour and magnitude of its monumental buildings. The architectural development of the city has up to the present time been retarded very much by an insufficiency of means, which, in a naturally poor country which had to work its way up by its own exertions, were still more limited by the parsimoniousness of its administration. The great public buildings of Berlin have been erected one after another, within the last two centuries, with a steadiness and perseverance without their equal in Germany. Although building at no time has been completely suspended, it has never been more active at any particular period, so that the buildings of one epoch should predominate over those of any other. Each section of the history of the city is represented by buildings bearing its characteristic stamp. It would be wrong to fix upon the time of the architect Schinkel as the starting-point of a particular school, that which affected Hellenic forms. On the contrary, it may justly be stated that there is a sober sameness pervading the whole of the architecture of Berlin, having its origin, probably, in the whole history of Berlin, if not in the traditions of the Prussian state. This is especially noticeable in the architecture of Berlin dating from the Middle Ages. Several churches and chapels dating from the beginning of the fourteenth century are still extant,—simple Gothic erections in brick. Of the architects who created them, the name of only one is known, that of Master Bernhard, who in 1471–74 erected the chapter-house of the Graue Kloster.

With the Reformation, and until the Thirty Years' War, Renaissance forms came in vogue but its creations were few, and fewer still are preserved. Kaspar Theiss is named as the architect of the Elector Joachim II. (1535–1571), and he, in conjunction with the sculptor Hans Schoutzlich, transformed the old Burg into a castle of the style of his times, the later German Renaissance with a trace of Gothic traditions. Several Italian architects followed him, one of whom, the celebrated military engineer Rochus Guerini, Count of Lynar, built in 1590 the still existing cross wing of the Castle. The part of the Castle called the "House of the Duchess" was probably built by the architect Hans Räspell. The Italians Elias de Galli and Giovanni Baptista de Sala, as well as the two brothers Peter and Martin Kummer, both Saxons, continued the building operations of the Castle under the Elector Joachim Friedrich. Of the private buildings of that time, only one is still in existence, the house erected for a Herr von Ribbeck, in the Breitestrasse, in 1624, in the later German Renaissance style, with four gables,—at present forming part of the royal stables. It is ascribed to the Dresden architect Balthasar Benzelt.

After the devastations of the Thirty Years' War, it was especially the Great Elector who did much for Berlin architecturally. He employed principally Dutch architects, the first of whom was Johann Gregor Memhard (about 1645). He is the creator of Unter den Linden, the Dorotheenstadt, and the Friedrichs-Werder, but he is principally known, though ungratefully very little remembered, as the constructor of the first fortifications of Berlin, being a military engineer and architect. He also added to the Castle, this handiwork of successive generations of architects. Beyond these, little is left of his work. The architect Smids followed him; he was principally a hydraulic engineer, the Friedrich-Wilhelm-Canal and other minor constructions being his work. But the most eminent of Berlin's architects of the seventeenth century—at any rate, the first artist—was Johann Arnold Nehring. When Memhard died, he continued the building of the Castle. His works are very numerous; many have been demolished, others are awaiting the fate which the modern requirements of Berlin demand, but his principal ones are still preserved. He is looked upon as the founder of the Berlin style of architecture. Among his successors, the eminent architect Schlüter is one of the best; and he continued in the favour of his employer, the splendour-loving King Friedrich I., until the threatening falling-in of the Münzthurm in 1706 led to his dismissal. He then went to Russia, following the call of Peter the Great, but died in 1713, without having achieved anything worthy of his former fame. The memory of Andreas Schlüter, notwithstanding his faults, the principal one among which being his utter disregard or ignorance of technical requirements, will long be preserved by his works, which are, and are likely to remain for a long time, still undisturbed. His rival, Johann Friedrich von Eosander, *alias* Göthe, by many considered the cause of his fall, and Jean de Bodt, his successor, shared Schlüter's fate in being dismissed from government employ at the accession of Friedrich Wilhelm I., whose reign is almost a blank of architectural creations of a public nature, compensated for in some respects, however, by the erection of numerous private buildings.

With Frederick the Great a new era of architecture seemed to be dawning upon Berlin, especially as the most eminent architect of that reign, Georg von Knobelsdorff, was one of the more intimate circle of the art- and science-loving monarch. Unfortunately, Knobelsdorff was too independent for subordinating his art to the personal inclinations of the King, and his ability found but partial employment under him. He was the creator successively of the castle of Rheinsberg, the new wings of the castles of Charlottenburg and Monbijou, the theatre in the Castle at Berlin, the Opera, as well as the artistic re-arrangement of the Thiergarten. The construction of the castle of Sanssouci led to the permanent estrangement between the King and his architect. Another eminent architect of Frederick the Great's reign was Karl von Gontard. He had a hand in the construction of the Neue Palais, at Potsdam. In Berlin he built the colonnades of the Spittelbrücke, the Königbrücke, the two towers on the Gensdarmenmarkt, and numerous private buildings. In Potsdam he also erected the Marmorpalais. Of still greater importance were the works of Georg Christian Unger, which include the Bibliothek, the Kadettenhaus, the colonnades of the Jägerbrücke, and the Spandau Bridge.

Passing the reign of Friedrich Wilhelm II., which, with the exception of Carl Gotthard Langhans, produced no architect of eminence, we come, in the reign of his successor, upon Karl Friedrich Schinkel, whose works are too numerous too mention now, and who may be said to have been without an equal. Since the death of Schinkel, in 1841, more than a generation has elapsed, and during that time an artistic development of no mean merit has taken place in Berlin. The authors wisely abstain from a detailed criticism of men still living, some still in the prime of their creative career. Speaking generally, it may be said that the successors of Schinkel have striven hard to imitate their great master, their works bearing more or less the stamp of the Hellenic Renaissance. Their activity has displayed itself at present chiefly in private architecture, which presents their best creations, but there are signs that the great public works, the erection of which is in immediate prospect, will open up to the architects of Berlin a wholesome competition.

Having said this much of the men who have

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* See p. 1070, *ante*.

† Berlin und seine Bauten. Herausgegeben vom Architecten-Verein zu Berlin. Mit 609 Holzschnitten nebst 8 Kupfer- und Karten-Beilagen. Zwei Theile. Berlin, 1877. Eigenthum des Vereins. London: Williams & Norgate.

directed the architectural development of Berlin for the last two centuries, with the space at our disposal we shall not be able to enter into details respecting them, but only to draw attention to some of their principal works. Among the erections most characteristic of Berlin may be numbered the colonnades forming a sort of open hall to the bridges, the best of them being the colonnade of the Königbrücke, erected after the designs of the architect C. von Gontard. The Brandenburger Thor, by C. G. Langhans, surmounted by a Victoria standing in a *quadriga*, justifies the world-wide fame which it enjoys. The monument of Victory (*Siegesdenkmal*), on the Königplatz, designed by Strack, and inaugurated in 1873, the foundation-stone being laid in 1865, is to keep alive the memory of the eventful years 1864, 1866, and 1870–71; its cost was 1,800,000 marks (90,000*l*.). The equestrian statue of the Great Elector, on the Lange Brücke, or Kurfürstenbrücke, is the oldest of the many ornaments of Berlin; by many critics it is considered still the best. Next in rank is the monument in honour of Frederick the Great, by Rauch, at the beginning of Unter den Linden. Its erection has occupied the attention of the artists of two generations; design after design was submitted and rejected, until, in 1840, Rauch's model was accepted, the statue being unveiled in 1851. Amongst public monuments erected to private men is the statue of the architect Schinkel, by Drake, in the vestibule of the Old Museum.

Of ecclesiastical buildings, the church of St. Nikolaus is the most ancient, its oldest portions dating from the year 1223. Next to it in age is the Klosterkirche (1272–1300). It was last restored in 1840. Among the churches of the seventeenth and eighteenth centuries may be mentioned the Dorotheenkirche (1678–87, restored in 1860–62); the Französische Kirche, the Neue Kirche, &c.; but the principal one among them is the new Cathedral, erected under Frederick the Great, by Boumann the elder (1747–50); restored by Schinkel in 1816–17. A remarkable building is the St. Hedwig Church, a circular temple. Of the ecclesiastical buildings of the nineteenth century, we mention the St. Markuskirche, the Church of St. Michael (both by Soller), the Church of St. Peter, the Church of St. Thomas, the Zionkirche, and the new Synagogue (by Knoblauch).

Among buildings for public collections, the Royal Library, on the Opernplatz, and the University Library, may be referred to; but the grandest conceptions are undoubtedly the old Museum (Schinkel) and the New Museum (Stüler, Strack), as well as the National Gallery, not quite completed (see *Builder*, May 27 and June 17, 1876). Other prominent public buildings are—for the culture of science and art, the Academy, the University Buildings, the Bauakademie; for public instruction, the König-Wilhelm-Gymnasium, Französisches Gymnasium, the Realschule of the Dorotheenstadt, the Central-Turnhalle, and numerous other establishments; for the care of the sick and infirm, the St. Gertraud-Stiftung, the Charité, the New Hospitals, Allgemeines Krankenhaus. Among houses of correction, prisons, &c., we mention the great Penitentiary at the Plötzensee, near Berlin (see *Builder*, January 20, 1876). We may further mention, among various other public buildings, the new Guard-house and the Armoury, the numerous barracks (not a few of them with some claim to merit in architecture), the Imperial Chancellery, the Ministry of the Interior, the building of the General Staff, the General Post Office, the handsome Town-hall, the Exchange, Imperial Bank (see *Builder*, June 23, 1877), &c. Of course, it is impossible to take cognisance in a notice of this kind of all the thousand and one striking public and private buildings of Berlin, nor enter into a description of the royal castles at Berlin and Charlottenburg, nor the handsome residences of members of the royal family; we must refer the reader to the work itself. Suffice it to say that he will find there, be he architect, engineer, artist, antiquary, or historian, an abundance of material such as is not very often offered to him.

ENGINEERING WORKS.

The second part of the book, though the smallest, is by far the most interesting for the architect, the engineer, and the working builder, just as the first offers the greatest attraction to the statistician and geographer, the historian and economist, as well as the artist and the student of architecture.

(III.) The former history of Berlin offers but few instances of works which we moderns term "engineering works." Considering the situation of the city on the river Spree, hydraulic works became early necessary, but the wharfs and bridges, the mill-dams, weirs, and sluices, constructed during the first centuries after the foundation of Berlin, can only have been erections in wood of the most primitive description. In the same manner, very little was probably done for the requirements of the street traffic; the low-lying roads were gradually raised, but pavement was unknown before the end of the sixteenth century.

Engineering works proper were not known until a girdle of fortifications was drawn round the city towards the end of the seventeenth century, to be taken down again, however, after they had been standing hardly eighty years. Other works, originated by the last Elector of Brandenburg, such as the Lange Brücke, the embankment along the Burgstrasse, exist at the present day, witnesses to the monumental grandeur to which that time was able occasionally to rise when difficult problems had to be solved. With the quick development of the city, the planning and laying out of new quarters had repeatedly to be designed and marked out. The engineers employed were mostly Dutch, later also natives and other foreigners—Memhard, MM. Smids (the constructor of the Friedrich-Wilhelm-Canal), Nehring, Blesendorf, &c.; partly the same men who at the same time created the handsome edifices of the capital.

The eighteenth and the first third of the nineteenth century are devoid of works requiring remarkable engineering skill. The network of streets was gradually pushed farther out, the level of the roadway being repeatedly raised; by the side of the older restored and improved bridges, a not inconsiderable number of new ones (among them in 1796 the first iron bridge) were constructed after, by the removal of the fortifications, the inner city had been more closely united with the suburbs. Since the close of the eighteenth century, the high-roads leading out of Berlin were gradually converted into *chaussées* or macadamised roads.

It was only by the rapid growth of the city in the age of railways (the first of which it received in 1839), the rise of Berlin to a centre of trade and manufacture, that problems arose in ever greater numbers, and of ever greater importance, which it required the engineer to solve. In the first place, provision had to be made for the continually increasing traffic. Seven lines of railways converging in Berlin, with a circular railway, twenty-eight miles long, seventeen *chaussées*, the river Spree with three canals, five tramway lines, twenty-six lines of omnibuses with 145 vehicles, two lines of steamers with fourteen boats, 417 first-class and 3,490 second-class cabs, and 282 carriages called Thorwagen, with together over 20,000 horses, provide for the daily traffic, about 30,000 strangers arriving in or departing from the city. In 1872, the different omnibus lines carried 12,654,105 passengers; the number of persons arriving by rail being 3,512,408, those departing 3,570,462. The railways brought into Berlin 48,774,599 cwt. of goods, carrying away but 14,631,879 cwt.; 34,908 vessels of all descriptions entered Berlin, 33,902 left it, while 6,314 vessels passed the Spree through Berlin.

Such a traffic requires both safe and ample regulation, and the spreading conviction of the correctness of the English saying, that "Time is money," compels the people of Berlin to look carefully after their means of communication, and to have them made as perfect as possible. It is said that both the government and the municipality are doing their duty in this respect; but the local conditions, the narrowness of many streets, the want of suitable building material on the spot, the defective soil, the slight elevation of the whole city above the level of the river, cause difficulties to the engineer such as can only be appreciated by the engineer.

The road engineer finds a collection of the most incongruous attempts at road-making, from the simplest pavement of round rubble stones set in ballast, hardly to be called sand, to the most perfect and expensive execution in carefully-hewn square stones, with concrete foundation and asphalte filling, with foot pavements in granite kerbs, slabs, mosaic tiles, asphalte and cement covering.

Fresh demands are being made every day on the hydraulic architect. Along the Spree new riverine roads are to be made; along the canals the slopes of their banks are to be partly transformed into solid embankments, quays are to be formed; the availableness of the waterways is to be increased, the sluices are to be enlarged, and the tideway is to be improved. Besides all this, the increased traffic necessitates the widening and reconstruction of existing and the construction of new bridges. The present bridges offer a rich collection of specimens, from the simplest wooden pile-pier bridge, with or without flap for passing ships, up to the arched and handsomely decorated bridge of iron or stone. The introduction of railways has led to the construction of roadways over and under the lines in busy localities; the execution of a proposed railway right through Berlin promises shortly to give ample employment to the engineer, as will also the great buildings necessary for enlarging existing termini or erecting additional ones.

The requirements made on the great city from a sanitary point of view are of a somewhat different nature. To its shame, sanitary measures have been too long neglected, and great exertions will have to be made to retrieve what has been lost. The execution of great drainage works has at last been resolved upon, and already been begun. At the same time, the municipality has acquired the waterworks, intending also shortly to enlarge them, to ensure a better supply. A large field has thus been opened out to the engineer.

The streets and places of Old Berlin are generally narrow, and have been laid down without any plan; they mostly run parallel with the watercourses, or they follow in their direction the old high-roads leading straight to neighbouring villages. Modern Berlin is built on a plan prepared in 1858. Berlin has at present 580 streets, of a length of nearly 190 English miles. Its longest streets are Friedrichstrasse (two miles), Oranienstrasse (two miles); Leipziger Strasse (1·11 mile); well-known Unter den Linden, 159 ft. wide, has a length of only 1,094 yards. Berlin's greatest open space, the Königplatz, has an area of 10,376,430 square feet, or 238 acres. The streets of Berlin are perhaps paved worse than those of any other capital.

There are very few public parks in Berlin, and the extensive forests round it, which in summer are the trysting-places of numerous pic-nic parties, offer equivalents which will be still more appreciated when they are brought nearer to Berlin by railway communication, &c.

Tramways were introduced in Berlin as early as 1865, and there is now a complete network of these useful public conveniences all over the capital; the total length of tramways open, or shortly to be opened, being 57 miles.

The water communication of Berlin is excellent, and this, as has already been pointed out, contributes not a little to the commercial importance of Berlin. The Spree itself, which takes its rise in the hills of Prussian Lusatia, does not play the principal part in its intercourse with the surrounding districts. This is performed by the system of canals already mentioned, which connect Berlin with the Oder and Elbe. Besides those already existing, there are several others projected, which will still further facilitate the intercourse of Berlin with the east, west, and north of Germany.

Compared with other European capitals,—London, Paris, St. Petersburg, and Vienna,—Berlin is far behind in respect of the grandeur of its bridges. Though its bridges are very numerous, they are mostly insignificant. The fact is, there is no room for display in a river of such limited width; the low banks of which, besides, leave little room for an application of striking architectural features. Perhaps the most handsome structures among them are the Schillingbrücke, the Lange or Kurfürsten-Brücke, the Alsenbrücke, and the handsome bridge of one arch in the Hitzigstrasse. The most important railway bridges are that of the Berlin-Görlitz Railway, that of the Berlin-Potsdam Railway, the bridge over the Berlin-Spandau Canal of the Berlin Circular Railway, and the bridge over the Spree of the same line.

As regards the railways converging upon Berlin, there are at present seven of them, while three more are constructing. They are: on the south-east,—the Berlin-Görlitz, Königl. Niederschlesisch-Märkisch, and the Königl. Ost railways; north,—the Nordbahn (Berlin-Stralsund; building); north-west,—the Berlin-Stettin, the Berlin-Hamburg, and the Berlin-Lehrte railways; west,—the Berlin-Wetzlar (building; government) railway; south-west,—the Berlin-Potsdam, Berlin-Dresden, and Berlin-Anhalt railways. Besides these, there runs at some

distance round Berlin the Königl. Berliner Verbindungsbahn. Plans are also being prepared for the Berlin Railway, which, crossing Berlin in an almost straight line from east to west, is to serve as a junction railway for the state railways leading east and west, and also for local traffic. This latter line will supply, what has been long wanted, a central terminus. Among the larger stations, may be mentioned those of the Berlin-Potsdam-Magdeburg, Niederschlesisch-Märkisch, Ost, Berlin-Lehrte lines, &c.

The Berlin Waterworks were opened in the spring of 1856, by an English company, which obtained the royal concession for its undertaking in 1852, but which did not commence its works till 1854. The buildings are situate close to the Stralau Gate, separated from the river Spree only by the road leading to Stralau, and extends as far as the Niederschlesisch-Märkisch Railway. They are erected in yellow brickwork, and in simple English Gothic. The water supplied to Berlin is taken from the Spree, raised on to filter-basins, filtered, and driven by steam-power through the whole city. The supply depending entirely upon the power of the hydraulic engines, and high-level reservoirs being absent on account of the low level of the soil, it is necessary that the filters and the machinery should be able to satisfy the hourly maximum want of the city. The original filter area proving insufficient, two new open filter-beds were opened in 1866, and at the same time it was found that the machinery also was unable to supply the want, which led to additional independent new pumping machinery being erected in 1868. Three more filter-beds have also been since opened. The water-works were purchased by the municipality of Berlin in 1874.

Soon after, it was found that, notwithstanding all these additions, the supply of water was growing daily more insufficient for the rapidly increasing population of Berlin, and the municipality at once acted upon the report which it had ordered to be prepared. In order to accelerate at least the partial completion of the new waterworks, which are situate upon the Tegel Lake, seven miles from Berlin, it was resolved to construct two works instead of one. Operations were carried on so rapidly that already at the end of last year one of the works was opened, including several high-level reservoirs. The other half, it is expected, will be completed in between seven and eight years. The cost of the whole is estimated, when completed, at 12,605,200 marks (630,260*l.*).

A most difficult and complicated subject for the engineer is the draining of Berlin. The fourth capital of Europe, to its shame it must be said, it has not yet a properly-regulated system of drains and sewers, although its level situation, its dense population, its extent, and the water supply introduced in 1856, make such a work necessary. The evils arising from this want have been felt for years, and have led to a number of schemes being proposed, the earliest of which dates from 1816. But it must be borne in mind that the draining of Berlin meets with difficulties such as are not often encountered in other large cities. In the first place, the multiplicity of interests sure to be affected has to be conciliated. Then there is the further difficulty of the ground-water; Berlin lying so low, and the excessively light sand which forms the greatest part of the soil on which Berlin is built permits water to percolate in large quantities, increasing the difficulty of construction, and necessitating enormous outlay for concrete foundations. Strange to say, the project has been looked upon with most unfavourable eyes, not only by the poorer classes, but by the rich as well. But it found a ready ally in the sanitary authority of Berlin; the farming interest, however, especially in consequence of the strange part Dr. Liebig took in the matter, strongly opposed the scheme in favour of a so-called removal system. Meeting with little patronage on the part of the Government, the question of the draining of towns, and of Berlin especially, was left entirely to the discussion of the public press and societies. Only in 1869 the subject was again brought before the public by a series of experiments being ordered by the municipality of Berlin. The result was, that the necessity for a general drainage of Berlin was recognised, and that in 1873 the corporation resolved to take in hand at once in the first place the south-western part of Berlin the work of canalisation, after the plans of Baurath Hobrecht. Rejecting a former proposal, partly based on Bazalgette's system of draining London, Hobrecht's scheme is based on the principle of dividing Berlin into twelve districts, and to drain each district independently of the others; to construct at suitable spots intermediate pumping-stations for raising the sewage from one level to another, in order to ensure the required fall, this, on account of the low level of Berlin, forming one of the principal difficulties; and to conduct the sewage to a central pumping-station, and raise it there for purposes of irrigation, instead of letting it run into the river Spree below Berlin. The works of canalisation and the construction of the pumping-station are in full progress.

(IV.) The subject of the industry and commerce of Berlin, as well as its industrial buildings, is treated in a separate section. Having formerly been the centre of intercourse between Germans and Slavs, the importance of Berlin as a trading town was early established. Berlin continued to prosper until the Thirty Years' War, when, like all large towns of Germany, it suffered heavily. The Great Elector did much for the trade of Berlin by his canal works; its industry received a mighty impulse by the wise policy of the Hohenzollern of giving a hospitable welcome and every encouragement to the expelled French Protestants, who began to settle in Berlin in 1685, and later to the Bohemian colonists.

Since the time of Frederick the Great, the manufacture of porcelain has been one of the most prosperous branches of industry. England takes now a large share of the goods made there. The weaving of woollens is another very profitable branch of employment. It was first introduced at the beginning of the eighteenth century, by Friedrich Wilhelm I. A favourable sign of the extensive trade of Berlin is the flourishing state of the forwarding business. The principal branches of commerce are now the corn, wool, and cattle trades. There are large distilleries and breweries. But by far the most important branch of industry is the manufacture of machinery and iron goods generally, which has received a still greater impulse by the railways. Moabit is the great seat of the iron industry, and there again the well-known iron and locomotive works of Borsig are the principal ones. Art industry also occupies a high place, and the manufacture of telegraphic apparatus has long ago given Berlin a name. For details respecting the large number of industrial establishments, we must refer the reader to the work itself. Though, properly, the great cannon foundry and artillery workshops of Spandau are rather extraneous matter while speaking of Berlin, yet they find a descriptive place in the book. The great cattle-market and slaughter-houses are models worth studying.

(V.) Highly interesting for builders is the section treating of the building materials used in Berlin, and the description of the principal modes of construction. The principal and only place of supply of limestone for Berlin is the ridge of limestone hills near Rüdersdorf, sixteen miles east of the city, where pits were first driven in the fifteenth century, and have been worked ever since. The works now belong to the State, and in 1875 yielded a net profit of 55,230*l.*, of which one-sixth was paid over to the city of Berlin for its proprietary rights in the pits. This will give an idea of their yield, the pits being, however, only worked according to the demand for the stone, the receipts thus forming an accurate index to the building activity of Berlin. The best descriptions of limestone fetch 1*l.* 1*s.* to 1*l.* 4*s.* per cubic mètre (35½ cubic feet). Granite has to be brought some distance from Berlin, from Silesia and Saxony, but also from the Fichtelgebirge. The price for unworked granite at Berlin is now 12*l.* 10*s.* to 17*l.* 10*s.* per cubic mètre, while polished descriptions fetch as much as 75*l.* to 100*l.* Sandstone is imported from Saxony, Thuringia, Silesia, and Hanover, prices ranging from 3*l.* to 7*l.* 10*s.* per cubic mètre. The use of French limestone has come into vogue during the last few years, in consequence of the moderate charge for carriage, and its price delivered at Berlin is now from 4*l.* 10*s.* to 6*l.* per cubic mètre. Marble is brought from all parts of Europe, but the descriptions principally used are Silesian and Carrara marble, as well as Belgian marble. A great deal of slate is imported from England. The scarcity of other building materials early led to the employment of bricks, and the easy water communication helped much to increase its use, comparatively little brick-earth, however, being found near Berlin. In 1873, from April 1st to December 31st, 22,628,558 cwt. of bricks, tiles, and drain-pipes were imported by water alone; the prices during that period, which was the most active the Berlin building trade has yet known, ranging from 3*l.* to 5*l.* 10*s.* per thousand, according to quality. In 1875 prices had sunk down again to a normal level, 1*l.* 14*s.* to 3*l.* 17*s.* being paid per thousand. The manufacture o terra-cottas has lately risen to a high degree of excellence, the best descriptions being undoubtedly supplied by March, of Charlottenburg As regards timber, Berlin is most favourably situated, deriving nearly all of it from the pine forests of the Mark Brandenburg and the neighbouring provinces. Prices range now from 2*l.* 10*s.* to 5*l.* per cubic mètre. Oak-wood now fetches from 7*l.* to 7*l.* 10*s.* per cubic mètre. Berlin being so favourably situated with regard to the principal iron-producing countries, England and Belgium, which compete with Westphalia and Silesia, the prices of iron in Berlin keep at a moderate level. They move for pig-iron between 7*s.* to 19*s.* per cwt.; 24*s.* to 36*s.* for cast-iron; and 22*s.* to 40*s.* for rolled iron (girders, rails, &c.). For the different modes of construction pursued, we must refer the reader to the work itself.

We may remark, in conclusion, that, in treating so fully the subject of the book, only justice has been done to a valuable work. The careful arrangement of the matter under five distinct heads, which division is still further carried through to the smallest details, make the volume the best book of reference obtainable. The work is profusely illustrated, great care being bestowed on the illustrations. There are, besides eight large plans, of which the largest is a very good map of Berlin and its neighbourhood, the latter, as well as the letterpress of the book and the paper on which it is printed, being excellent

LEEDS CASTLE, MAIDSTONE.

Accepting the hospitable invitation of Mr. C. Wykeham Martin, M.P., the Council of the British Archæological Association and some of their friends, a numerous party, visited Leeds Castle on Tuesday, the 23rd ult., and, in spite of very bad weather, found much pleasure and profit in the visit. After courteously receiving his guests in the hall of the castle,

Mr. Wykeham Martin said,—First let me offer you, on behalf of myself and my wife, a hearty welcome to Leeds Castle. I have long wished that I might have the honour of this visit, and can only express my regret that you should have selected the first wet day we have had for six weeks. Let us hope the weather may improve. I will, without longer preface, proceed to give you a sketch of the history and points of interest in this building:—Leeds Castle is remarkable from three points of view. 1st. Because it was the jointure-house of every queen of England in succession from Edward I. to Edward VI. 2nd. Because a very great portion of it is in good repair, and exactly in the position in which Edward I. and Henry VIII., the two great founders of most of it, left it. 3rd. Because it was, at the time it was erected, a fortress of the first-class, according to the weapons and manner of carrying on warfare in those times. It was planned by engineers of no mean skill, and they secured what is thought of so much importance now, a flank as well as a direct fire, both of small arms and the artillery of that day, upon every line by which an enemy could approach. It was situated on three islands; it still is upon two, surrounded by three lakes, of which only the smallest, of sixteen acres, remains; but the largest could be, and has been, filled in a few hours. There was, in each direction, a long, narrow causeway between two deep lakes, the enemy being exposed to point-blank flank fire for some distance. The place consisted of five fortresses, the outer barbican, then a large loopholed barrack, with no external windows, capable of holding at least 200 men, with cellarage for provisions, &c. I have myself seated 177 people in one room at a concert with a stage holding forty people. Beyond this was, till 1821, a loop-holed crenellated wall, within which there were five two-storied towers, where the bastions now are. Fourthly, there was the building in which we now are, beyond which was the citadel or old castle built on solid rock, the walls going down into the moat, the depth of which was 20 ft., the space from the water to the windows being 18 ft. You may wish to know the date of the oldest part of the buildings which now exist. Now, as the exact date is in dispute, I will not claim a greater age than 1265, at which date much of it was certainly standing; but I hope to convince you some of it is much older. There is a board in Leeds Church which is copied from one that used to

hang in Leeds Abbey, and which is confirmed from other sources, stating that Robert de Crevecœur placed four cannons in Leeds Castle, in the north-west corner. Now my late lamented father seems to have overlooked the fact, which he mentions in his work on the subject, that two chapels existed in the castle as late as Henry IV. Archbishop Arundel states that he tried Lord Cobham for heresy in the "larger chapel." If the other chapel, as has been conjectured, was out by the barracks, and a ruin in Edward II.'s time, it would have hardly been mentioned. But in the north-west corner of the castle there is a small room with a window of a very ecclesiastical appearance, which even those antiquaries who decline to fix an older date than 1265 admit, seems to be of the time of King Stephen. I hope to prove the same point by circumstantial evidence; but be this as it may, whether the building is over 600 or over 700 years old is of small importance. I mentioned that the castle was the jointure-house of every queen in succession from Edward I. For a few years in Edward II.'s reign it (though the jointure-house of Isabella, called the she-wolf of France) passed into the hands of Lord Badlesmere, one of the king's favourites. During his absence, Isabella, under pretence of a pilgrimage to Canterbury, asked for a night's lodging with a very large retinue. Lady Badlesmere refused to admit any one in her husband's absence. Isabella attempted to storm the place, but was defeated with great loss,—to this day we dig up the skeletons of those who were slain. She implored her husband to avenge the insult, and he called out the *posse comitatus* of the neighbouring counties as far as Hampshire. Unluckily for the garrison he commenced the siege on St. Luke's day, the 18th of October, just before the Martinmas stock of provisions was laid in for the winter, and the king reduced the place by famine. Froissart mentions it "as a very fair palace." To Henry IV. and the trial of Lord Cobham I have alluded. Henry V. coveted it for his own wife, but his father had left a young widow, Joan, who had a fair prospect of outliving, and, indeed, actually did outlive, her stepson. He charged her with heresy, and placed her in confinement during his reign,—how justly may be guessed from a paper which I hold in my hand, being a message sent to Parliament saying that "he was advised no longer to have it on his conscience," and imploring them in the name of God to restore her property to her. His repentance was tardy, as the message was sent in July and he died in August. Henry VIII. was, next to Edward I., the great builder here. He fitted up the old castle for Catherine of Arragon. Anne Boleyn was also here, and we have some relics of her. Edward VI. sold it to Sir Warham St. Leger. He was ruined by the Irish wars in Queen Elizabeth's reign, and by having the Earl of Desmond and his family, fourteen in number, committed to his care. He complains bitterly that he had received no money from the Queen for "their diets," and naïvely adds,—"They have no money of their own, saving your honour, Lord Burleigh; no not to purchase themselves 'a pair of shooes' [*sic*], and *stand in despair of* having any from their own country." He sold it to a family named Smith, and they, after receiving one part, sold it to Lord Colepepper, who assisted Henrietta Maria to escape from Portsmouth. He left an only daughter, who married the fifth Lord Fairfax. His sons died *s. p.*, and his daughter married the Rev. D. Martin, from whom it ultimately passed to my grandfather. To give one touch of romance, for the sake of the ladies, to so long and I fear so dry a speech, I may say that in 1272 William de Leyburn surrendered the castle (I am not clear whether voluntarily or under pressure) to Edward I. He left a daughter, Idonea, who married Geoffrey, Lord Say, of whom I am the direct descendant, though not of the elder branch. We have here some curious manuscripts. One, an autograph letter from Henrietta Maria to Lord Colepepper, in which (as it is very long I will not detain you by reading the whole) the burden of the letter is "that the estrangement from my son, the king, is in nowise my fault." Another is very curious. Some of us are old enough to have had to learn by heart Pope's lines as a school exercise; many of us have seen paintings about the death of Buckingham. The lines commence (line 299, Essay iii., "Moral Essays") with the words,—

"In the worst inn's worst room,"

and terminate with,—

"There, victor of his health, of fortune, friends,
And fame, this lord of useless thousands ends."

These words were published in 1736, but in February, 1706, a rumour was abroad that they had been written. The duke's widow interfered, and they were never published till after her death; but I read a copy of an original letter which I possess, which is published in the report of the Historical Manuscripts Commission, which proves that the duke died in his own house, the best in the village of Kirby Moorside, *which is not, and never was, an alehouse*, with his steward and two peers of the realm with him. He was not ruined in fortune, and it is said "He was always pleased to express a love for good men and good things, how little able soever he was to live up to what he knew." I have detained you too long, but the Scotch have a great repugnance to written sermons, and experience has taught me that an audience in England equally dislikes a written lecture. I have endeavoured to give you this description without notes, and if I have failed, make this allowance for me,—"*Magnis tamen excedit ausis.*"

A perambulation then took place, and the various salient features of the building were pointed out and commented on. Afterwards Mr. Wykeham Martin entertained his guests at luncheon, Mr. Godwin, as a vice-president of the Association, proposed the health of their host, to which Mr. Martin genially responded, and other addresses were made by Mr. Morgan, F.S.A., the Rev. Canon Scott Robertson, and others.

A portion of the party proceeded to Leeds Church, where they were met by Mr. Gordon M. Hills, under whose direction it is about to be restored. An interesting account of this structure, by Mr. Hills, we give as a separate article.

LEEDS PRIORY.

It had been intended to visit the site of Leeds Priory, to investigate the foundations of the church which several years ago were partially excavated by the late Mr. C. Wykeham Martin, but time prevented. The church is described by more than one old writer as having been of great extent, equalling in size some of the cathedrals; but although large portions of the priory buildings remained until the end of the last century, it had been recorded that the church was demolished at the dissolution.

Mr. Loftus Brock, F.S.A., who was ready to guide the party, writes to us thus on the subject:—

The excavations revealed a portion of the apse of the church and of a crypt beneath, with several foundation-walls of late Norman date. Some of the faced work was of neatly-wrought Caen stone, with several interesting masons' marks, while portions of a pavement of small square and diamond-shaped glazed tiles were also met with. Elsewhere, some moulded bases of Early English clustered columns of Bethersden marble were found in the position where the nave and aisles of the church would have extended to, and thus afford evidence, by the difference of the style, that the nave was of later date than the presbytery. It is to be regretted that the excavations were not extended further, and it is to be hoped they may be resumed, when it is probable that more interesting results will be obtained. The priory (it is sometimes erroneously called an abbey) was for Augustine canons, and was founded A.D. 1119, soon after the introduction of the order into England, by Robert de Crevecœur, Lord of Leeds Castle, as is attested by the date in the Rochester Chronicle. Dugdale sets forth many documents of interest, and among these the Charter of Inspeximus, 41 Edward III., which records many gifts bestowed by other members of the Crevecœur family. The priory, like many other similar establishments in the period preceding the Reformation, was deeply in debt, but was rescued from such an unpleasant position by the timely help of Goldwell, Bishop of Norwich, who, having lent a large sum to the prior and brethren, founded a chantry here, instead of requiring the return of the debt. At the surrender, 31st Henry VIII., the value was 362*l.* 7*s.* per annum, and the prior retired with a pension of 80*l.* per annum. The records relating to the structure of the church are very meagre, but we learn that it was dedicated to the Blessed Virgin and St. Nicholas (the adjacent parish church is also dedicated to St. Nicholas). There was an altar of the Virgin Mary in the south aisle of the church, and she had a celebrated statue in the building. Leland records the interment of several notable persons within the church, and especially several of the lords of Leeds Castle.

No remains exist of the mansion-house of th Meredith family, which was built among the ruins of the priory after the dissolution, and which in its turn was demolished at the close of the last century.

Maidstone had put in a claim to entertain the Association, but the day was already spent, and the party made for London without further stay.

LEEDS CHURCH, KENT.

On approaching the church from the west, the low, very broad, and massive tower standing at its west end so hides the church that one is surprised, after entering by the west door, to find the really important church to which the tower opens. The external view of the church conveys at once the idea that the tower is of Norman date. It has the low, square, pyramidal roof proper to that period, although the roof is really modern, and upon it some rustic architect has most clumsily set an octagonal shingled spire of stunted proportions, painted white. The parapet of the tower has lost all traces of Norman architecture, having, no doubt, been rebuilt when the roof was renewed, which the dates upon the bells, and the indications of the bell-frames and timber-work, show to have been about 1730. The buttresses to the eastern angles of the tower have but little projection, and are plainly Norman, running up to the parapet without a break; those to the western angles are larger and lower, diminishing by two tablings, and finishing at little more than half the height of the tower; they have an aspect of a rather later era, whilst the west door is distinctly of the Early English period. The rustic architect who has distinguished himself by his spire appears also to have operated on the tower windows; two of them are in the west front, considerably raised from the ground, but lighting the bottom stage; the tops of these are somewhat concealed inside by a modern floor, but on that side, as far as can be seen, they are Norman, whilst on the outside, by a mischievous but ingenious method of drawing lines in the masonry, in imitation of mortar-joints, as if for voussoirs of lancet-shaped heads, and by trimming the opening into that shape, they are made to look something like Early English windows. The next stage of the tower has a window north and south, the same disguise has been attempted with them, but being much larger the failure is much more conspicuous; the outer order of the masonry retains its Norman shape in perfection, the inner order only has been mutilated into a lancet-shape, which the bungling hand of the rustic architect completed by adding lancet-shaped wooden frames inside the stonework. The belfry stage of the tower has no ancient windows, but there have been two modern ones made to it on the east side opening on each side, a little lower down than the ridge of the nave roof, their age easily distinguished by their modern brick dressings. All the dressings to the buttresses and Norman windows are of tufa, a stone widely used in Kent and Sussex in the Norman and pre-Norman works, but repeated investigations have never enabled me to say whence this stone was procured. The Early English door has the abaci of its capitals and springings of the arch-mould in Caen stone, whilst the capitals and the arch itself are of the grey chalk formation, like the so-called "fire-stone" of Reigate and the "church" of Cambridge. The absence of any ancient windows in the belfry stage, and of all marks of Norman architecture at the top, points to the conclusion that at some time, perhaps when the present peal of bells was arranged, about 140 years ago, the tower was somewhat reduced in height.

The western side of the tower opens to the interior of the church, with an arch measuring 10 ft. 6 in. in the clear width, and 19 ft. 6 in. from the present pavement to the soffit at the crown. The mason-work of the arch is wholly concealed by thick coats of modern plaster, where it is not wholly incased by the lath-and-plaster partitioning and painted deal panelling of a gallery adorned with a Palladian colonnade of wooden columns. A breach or two which I have made in these modern disfigurements shows that the arch is of Early Norman form and detail, constructed chiefly of tufa masonry, but with massive abaci of hard dark-brown iron-stone, with ponderous cushion capitals, now sadly mutilated, of Caen or similar stone, and much ruined and disfigured columns of the same stone. Mr. Rickman, some fifty years

ago, says of this arch, it "has on the western side very much the appearance of the Anglo-Saxon character, the work being rude, and square blocks of stone used in the place of capitals; but on comparing this with the eastern side of the same arch, it is evident that the work has only been left rough and unfinished, probably because it was not intended to be seen; the eastern side is in the usual Norman style of the time of Henry I., and the Augustinian Priory to which it belonged was not founded until 1119." Mr. Rickman examined this arch, probably in the same state of concealment in which I first saw it, and without the opportunity of breaking through its now condemned enshroudings which I have had. The rudeness of which he spoke is due to mutilation more than to design; some parts of the western side can now be seen retaining in perfection their true form and character. Still it is not impossible that, when fully exposed, the arch may be found to have a character of the age of Edward the Confessor. The walls of the tower are not less than 6 ft. 9 in. thick, and the area within the tower walls is 24 ft. by 22 ft.

The nave is lofty, and of three bays in length. The arcades have slender octagon shafts, with well-moulded caps and bases, and deeply cut mouldings to the arches, which are high and pointed; the whole constructed in "rag" stone. Nowadays, masons flinch from working this hard stone for such purposes; but in Mediæval times its hardness was no discouragement; nay, it to some extent tempted elaboration of design, being susceptible of receiving exceedingly sharp and fine edges, so that in this and other instances in the district not only are the mouldings elaborate, but the faces of the octagon shafts, which in other districts would be left flat, are here hollowed in plan. This work is wholly of Perpendicular date. The nave roof is high-pitched, and of oak, and of the same date as the arcades. It had originally a simple wagon-head form inside, with tie-beams having moulded supports under their ends extending down the walls on to corbels, and timber arched framings between these supports all along the walls. In the course of time, as the old tie-beams decayed, three of them have been strapped and strengthened with iron, and two more beams added to contribute the strength which had departed from the old. The whole roof is now cased with plaster and whitewash, and the whole of the timbers in the parts near to the walls having so decayed as to need support, the walls have been raised in an awkward fashion, building in 4 ft. or 5 ft. of the lower ends of all the rafters.

The mention of side arcades to the nave will have indicated the fact that an aisle exists on each side. These aisles are of good width. The western part of the north aisle is of great antiquity where, to a height of 8 ft. or 9 ft. in the side wall and in the west wall following the form of a lean-to roof springing from that height, the rubble masonry is of a rude description, neither agreeing with the early rubble-work of the tower nor the later rubble-work of other parts of the church. This ancient aisle-wall contains a narrow west window and three side windows, all now walled up, and all more or less disfigured, so concealed that it is hard to assign a date to them until the inside plaster shall have been removed, for the inside is now wholly concealed. At present they may be assigned to some time between A.D. 1,000 and A.D. 1,200. The south aisle has a west window of Perpendicular date, but with the exception of this and of the earlier parts in the north aisle, both aisles are of the Decorated period. In this era the north aisle was raised upon and the south aisle rebuilt. We may very well imagine that, at the time of this work, some ancient Norman arcades still remained, which were superseded still later by the Perpendicular arcades already described.

The nave and aisles open eastward by pointed arches of the same date as the nave arcades to the chancel and to a north and south chantry. Immediately in front of these eastern arches a fine oak screen extends quite across the church in an unbroken series of eleven arches. The whole of the oak tracery of these arches is perfect, and the blank panels of the lower part of the screen are all perfect; the screen doors to the north chantry, filling one of the screen arches, remain; but the corresponding doors to the chancel and south chantry are lost. So far, the remains of the screen, though disfigured by coats of white paint, are very sound and strong, and but little mutilated; but it has lost the whole of the fan tracery, in its upper part, which formed the coving for the floor of the rood-loft, and with this all cornicing and brattishing has disappeared. The absence of these parts leaves exposed to view the rude top beam and open unwrought spandrel frames above the screen arches, which gives to an otherwise excellent work some appearance of rudeness, in exposing work intended to be put out of sight.

The western part of the south wall of the south chantry is of the same kind of rubble-work as the most ancient part of the north aisle of the nave, and no doubt of the same date. This fragment in the chantry is in almost ruinous condition. It adjoins to a later turret, which gave access to the south end of the rood-loft. There is some indication that the east window of this chantry, now blocked up, and occupied on the inside with sepulchral monuments of the eighteenth century, may prove to be of Decorated date. Otherwise the eastern portions of the church are of Perpendicular date, or rather of two Perpendicular dates. The chancel is lofty, and has an arch on each side opening to the chantry, the south arch, perhaps, a little the earlier, whilst the north arch is a little the handsomer. Just eastward of the north arch a very late opening of three four-centred lights without cusps forms a hagioscope, giving a view of the high altar from the north chantry; and similarly on the south side, where there is a handsome sedilia in the chancel, the back of the sedilia is perforated in two lights, to form a hagioscope from the south chantry. The chancel roof is without tie-beams, and is in arched form throughout, with oak panels (originally, now deal) between the arched ribs under each rafter. All the timber is now whitewashed over, as well as the deal panels. The east window is of three lights, large, and of a good form, but filled with uncusped tracery and all the tracery-work of the four-centred type, giving the window a very uninteresting appearance, not according with the otherwise dignified proportions and appearance of the chancel. I incline to think that the extreme east wall of the chancel, with a small portion at the sides, has been rebuilt soon after the Reformation. At the sides, close to the east end, there are two single-light windows, now blanked up, but which are of the same character as the east window.

The north chantry is wholly of the Perpendicular date, and in the condition of its roof and walls is the most dilapidated part of the building. It is lighted by a three-light north window, of good design, and it had an exactly similar window in the east end, now completely blocked up by a monument. It had originally a nearly flat leaded roof, but this, with its timber, having fallen to decay, a high-pitched tiled roof was added over the ancient timbers; this high-pitched roof is itself now in great dilapidation.

So much for history written in stone and wood. I may add to it briefly what connects itself to this history from other sources. In the reign of King Ethelbert, which began in 978, a Saxon Thane built a castle at Leeds, and we cannot doubt that he built, if he did not find here, a church suited to the requirements of the tenants and dependents of his estate. Although the mansion of the nobleman was ere long wasted, a church continued, for when, after William the Conqueror had granted the estates of the Saxon nobleman Lewin to his half-brother, Odo, Bishop of Bayeux, the Domesday survey was made in 1080, a church was found at Leeds. The indications of the now-existing building make it possible to believe that in the tower and north aisle may still remain some fragments of this church of the Domesday book. Four years after the Domesday survey, Bishop Odo was deprived of his estates by the Conqueror, shortly after which the barony in which the Leeds estate was comprised was granted to Robert de Crevequer. He at first fixed his castle at Chatham, but afterwards began to build a castle at Leeds. His grandson, Robert, completed Leeds Castle, which thenceforward became the head of the barony. He founded in 1119–20 a priory of Austin Canons at Leeds, a short distance from the parish church, and, including this parish church, he gave to the priory of Leeds the advowsons of all his churches, so Leeds Church became of the patronage of the priory. It is most likely that Leeds church was enhanced in its architecture by the barons who built the castle and founded the priory, and perhaps most likely that the tower itself belongs nearly to the time of the beginning of the priory. In the deed of confirmation to the priory of the gifts of Robert de Crevequer, by his son Daniel de Crevequer, he designates Leeds Church as the Church of St. Nicholas, which is its present dedication. Of subsequent work to the church whilst this family remained founders and patrons of the priory, the only remaining trace is the west door, with its holy-water stoup, belonging, as its Early English architecture bespeaks, to about the year 1240. In 1268–9, Robert de Crevequer exchanged his manor of Leeds for other possessions. Roger de Leybourne for only two years, and then William de Leybourne till 1274, held the Leeds estate. The last named then surrendered it to King Edward I. Thenceforward until the Reformation the sovereigns of England held the position of founders of the priory, which thus lost the fostering care of a powerful resident family. The castle and lands were immediately given as part of the dowery of Edward's queen Margaret, who appointed Lord Badlesmere castellan. Upon that Queen's death he obtained in 1307 the same office direct from Edward II., but having joined the Earl of Lancaster in rebellion, and being taken prisoner with that prince at the battle of Boroughbridge, in 1322, Lord Badlesmere was tried with others, and finally suffered death as a traitor at Blean, near Canterbury. Lord Badlesmere was possessed of great wealth and power, and the party to which he had attached himself affected a great interest in regard to the monks, so that we cannot doubt Leeds Priory and its subordinate Leeds Church to have benefited by his liberality. To the period of his second possession of Leeds Castle, 1307 to 1322, may with much probability be attributed the "Decorated" work, that is, the raising of the aisle walls, and the dignifying of those parts with two-light traceried windows, three of which still exist, though in a state of great decay, the shelly marble and Clunch stone used in them having yielded grievously to the weather. Of the country gentlemen who succeeded at different times as custodians of the castle we have nothing to say. Richard II., however, made the castle his residence on several occasions after it had been beautified and extended under the wardenship of the celebrated William of Wykeham, who had been nominated to the wardenship, with others, in 1359. It is not unlikely that the earlier Perpendicular works are attributable to benefactions from Richard II., who died in 1399; that is to say, the arcades of the nave, and the older parts of the chancel. Henry IV. held the castle for a short time, and then granted it to Archbishop Arundel, who held it till his death in 1413. If not to Richard II., at any rate to this prelate, these works, including the fine oak screen, must, I think, be attributed. Leeds Priory was dissolved in 1534. In 1560 Queen Elizabeth granted to the Archbishops of Canterbury the rights of the advowson in the parish church, with whom it has since remained. Although in 1551 the fee simple of Leeds Castle was again for the first time since 1274 granted to a private owner, the Reformation and suppression of the priory had separated the church from the castle estate. The two chantries had belonged to the priory, and passed to the grantees of the priory lands, who out of the ruins of the priory built a residence long known as Leeds Abbey. The monuments in the chantries commemorate members of the family of Meredith, settled at the abbey. By another change of fortune, this family having gone to decay, their mansion is pulled down, and the ownership of the chantries has become annexed to the castle again, thus renewing again a part of the dependency of the ancient priory.

GORDON M. HILLS.

THE FRENCH GALLERY, PALL MALL.

THE Winter Exhibition in Mr. Wallis's Gallery, which opened this week, is chiefly notable for the presence of Wilkie's picture of the Chelsea Pensioners reading the *Gazette* announcing the news of the Battle of Waterloo,—a picture which is said to have created, on its first exhibition, almost as much excitement as the despatch itself, the arrival of which it celebrates. A special barrier had to be placed before the picture in the Academy Exhibition to protect it from the crowd which pressed round it. This excitement was probably more patriotic than artistic. The work, though practically new to many, will require no barrier now to protect it. Yet it is a work of great interest and spirit, one of the very best which Wilkie produced after he had quitted the walk in art in which his natural genius lay. Every figure in the centre group is a separate study; each contributes in his own manner to the general interest centered on the

reader of the news,—the mounted soldier, the hungry guest who pauses with his fork in his hand to listen for the end of the sentence, the youth who shouts the news into the ear of the deaf old pensioner beside him. Perhaps the best and most characteristic figure is that of the soldier who leans out of a window on the right, screwing up his features in his effort to hear what is read. The figures of some of the military heroes are rather conventional and long-legged; but in the main there is a great earnestness of intention in the whole.

We cannot say there is much interest in the exhibition generally. The two large works by Max are sensational, and destitute of real feeling; that by Maignan, of the deposition of Boniface VIII., contains fine and vigorous drawing, but in general conception hardly rises above the book-illustration style. The best things are among the small works: the three little military scenes by Medard are full of nature and spirit; some small landscapes by Windmaier and others are very beautiful as far as they go, and Lanckow's "Evening after Rain," and "A lovely Spot," by Heffner, deserve notice. Mdme. Bisschop's "Time flies" is a group of figures conceived and painted in a very broad, powerful style. There are, of course, other things that are worth attention, but, as a whole, the exhibition is very deficient in works of a high class of interest.

THE OPENING CONVERSAZIONE OF THE ARCHITECTURAL ASSOCIATION.

The opening *conversazione* of this Association for Session 1877–78, was held on Friday, the 26th inst., at 9, Conduit-street, the company being received by the President, Mr. Bowes A. Paice, and the hon. secretaries, Messrs. E. G. Hayes and R. C. Page. The walls of the two galleries on the ground floor were hung with a number of water-colour drawings, amongst which we noticed Weston Hall, Staffordshire (exterior and interior), by Mr. Aston Webb; an old house at Rye, by Mr. R. Phené Spiers; and, by the same gentleman, views of Wells Cathedral, Tintern Abbey, Bishop's Palace, Wells, Chepstow Castle, and Winchelsea Church Porch. Mr. W. Hilton Nash exhibited an interesting water-colour drawing of the courtyard of the Oxford Arms Inn, Warwick-lane, and Mr. R. S. Cox some sketches of Brazilian scenery, by Frank E. Cox. "Queen Anne" was represented by drawings of a terrace of houses erected at South Kensington, Mr. T. W. Cutler, architect; of Clifford-chambers, New Bond-street (T. H. Watson & F. H. Collins, architects); and of some other buildings. Mr. James Horsburgh lent an interesting series of photographs of Portugese buildings; Mr. H. Walter Lonsdale some designs for stained glass; and the Ladies' Needlework Society (of which H.R.H. the Princess Louise is president) some specimens of decorative needlework. A series of water-colour drawings by Mr. Philip J. Marvin, Travelling Student of the Royal Academy, 1875, exhibited a very interesting collection of Italian campaniles. Some vigorous pen-and-ink drawings, by the late F. C. Deshon, were also shown. The interest taken in Egyptian obelisks at the present time was reflected in some of the exhibits, notably in a *fac-simile* model of Cleopatra's Needle, one twenty-fourth full-size, lent by Mr. Waynman Dixon. An original drawing in colour by the late Owen Jones was hung on the walls. It bore the following explanatory inscription: — "Obelisk vulgarly called 'Cleopatra's Needle,' originally erected by the King Mœris before the Temple of the Sun at Heliopolis, and proposed to be erected as a trophy of the Egyptian victories of the immortal Nelson." The drawing showed a number of sphinxes at the base of the obelisk, disposed in a somewhat different manner to that in which the lions are arranged in the existing Nelson monument. This drawing formed one of an interesting series which have been presented to the Association by Miss Catherine Jones, sister of Mr. Owen Jones. The smaller gallery was principally devoted to what may be called "trade exhibits." Messrs. Trollope & Son lent some Justiniani ware, a vase in Mexican onyx, paperhangings, wall tapestry, and some Italian and other tilework. Messrs. Jeffrey & Co. exhibited some paperhangings, Messrs. Gillow & Co. some cabinets; while Messrs. M. J. C. Buckley & Co., of Bruges, sent some specimens of woven stuffs and art needlework "for church and house." By the courtesy of the Council of the Royal Institute of British Architects, the meeting-room and library of the Institute were placed at the disposal of the Association for the evening. The Institute meeting-room was principally devoted to the exhibition of the designs submitted by the members in competition for the various prizes offered by or through the Association. Refreshments were served, or rather scrambled for, in the Museum of Building Appliances, kindly lent for the occasion by Mr. Boyd.

The president (Mr. Paice) took the chair soon after nine o'clock, and proceeded to distribute the prizes, which, in accordance with the judges' reports, were awarded as follows,—books on architecture, decorative, or constructive, being given to the value of the sums named:—

First Prize (5*l.*) offered by the Architectural Union Company for the best series of measured drawings of existing buildings in England, or of portions of buildings, erected previously to the eighteenth century, awarded to Mr. J. Edgar Hatch, author of drawings bearing the motto:—"'Tis better to have tried and lost, than never to have tried at all." Second Prize (2*l.* 10*s.*) given by the Association for the second best series, awarded to Mr. M. J. Lansdell, motto "Excelsior."

First Prize (5*l.* 5*s.*) offered from the Prize Fund of the Association for the best design for a county court, suitable to a provincial town: awarded to Mr. G. A. Waters (motto, "Haste"); Mr. H. W. Burrows's design (motto, "Justice") accorded "Honourable Mention."

Class of Design: prize of 3*l.* 3*s.* for the best series of sketches contributed in the class during the past session: awarded to Mr. H. M. Robinson. Second prize of 2*l.* 2*s.* for the second best series: awarded to Mr. A. W. Hennings. "Honourable mention" accorded to Mr. J. W. Fisher.

Elementary Class of Design: prize of 2*l.* 2*s.* for the best series of studies submitted during the session: awarded to Mr. F. R. Farrow. Second prize, 1*l.* 1*s.*, awarded to Mr. A. Causton. "Honourable mention" made of Mr. Eden Smith, of Birmingham.

Colour Decoration Class: prize of 3*l.* 3*s.* for the best series of sketches submitted during the session: awarded to Mr. E. E. Deane.

Class of Construction and Practice: prize of 2*l.* 12*s.* 6*d.* for the best series of papers submitted at the meetings of the class, and second prize of 1*l.* 11*s.* 6*d.*: equally divided amongst Messrs. H. H. McConnell, of Walsall, R. Henry, and F. C. Hughes, of Birmingham (considered by the judges to be equal in merit). "Honourable mention" made of the papers of Messrs. H. Griffin and A. S. Gover.

Mr. H. H. Stannus next, at the request of the president, asked the Association to accept, at the hands of Miss Catherine Jones, the small collection of drawings (already referred to) of the late Owen Jones. Miss Jones wished it to be understood that the drawings in question were not to be regarded as specimens of the best of her brother's productions, but rather in the light of suggestions for consideration and study. Mr. Stannus remarked that Mr. Owen Jones was a student throughout the whole of his career, and commended his example to the attention of the members of the Association. In conclusion, he observed that the Association was indebted to Mr. Bonomi, of Sir John Soane's Museum, for having suggested to Miss Jones that a small selection of her brother's drawings would find a useful place in one of the portfolios of the Association.

The President then proceeded to deliver a short address, in which, after welcoming the company and recapitulating in detail the work of the Association for the past session, he said:—I have ventured to bring before those whom I have the honour of addressing some of the obvious advantages that this society offers to students for obtaining wider experience than can be possibly acquired in any single office; and the good which must eventually arise from habits of friendly intercourse and honourable rivalry with those who are here joined together for a common purpose. And now that the qualifications for an architect are becoming more generally known and recognised, I doubt not but that nondescripts of every sort, without possessing a single necessary requirement, will be unable to impose themselves as architects upon their opulent but misinformed employers; men who combine other means of livelihood to those which are generally assumed to be included in a general practice. Let me not be misunderstood: I am simply referring to those who have had neither an ordinary education nor studied the elementary principles of the art which they have the audacity to profess to follow. The past session has been, I am pleased to tell you, a most successful one; and I am sure that my brother members of this large society, numbering as it does some 700 members, will agree with me in saying that the success was very greatly due to the manner in which the president, Mr. H. C. Boyes, presided over the meetings, and also to the exertions of our honorary secretaries, Mr. Hayes and Mr. Aston Webb. It is not within my province this evening to dwell upon the numerous questions at present occupying the minds of the profession; but perhaps it may be allowed me to say just one word on the subject of restoration, one of very great interest to all, and which is now receiving a great deal of attention, and without entering into the merits and demerits of restoration, I venture to think that the recent attacks should have been made, not on duly-qualified architects, but on those who undertake such work without any previous knowledge of the subject. I do not for one moment doubt but that there is not a single architect in this room to-night who would dare destroy a page in the history of his country's art by the destruction or defacement of any portion, not only of *ancient* work, but also work of whatever style or period it might happen to be, provided it were good; such acts of Vandalism are not done by those who are earnest in their labours, and if there be any work to be undertaken by careful and loving hands, surely it is the restoration, preservation, or renovation, where absolutely necessary, of our cathedrals and our churches, whose hallowed walls have been handed down to us from generation to generation, as they were left by pious founders of old, every stone demanding our respect and veneration. Time will not permit me to speak of various other branches of art, much as I should like to do so, as there are many subjects deserving of a few remarks, as, for instance, glasswork, art pottery, tile-painting, art furniture, &c.; but I hope I may be allowed just to mention more in particular a subject of peculiar interest to the ladies and one which is receiving considerable attention both from architects and painters,—I allude to the revival of decorative needlework for secular purposes. No doubt a great impetus has been given to this branch of art in consequence of the royal family taking such an active part in furthering its advancement, H.R.H. the Princess Christian being president of the Royal School of Art Needlework, and H.R.H. the Princess Louise, president of the Ladies' Needlework Society, in Sloane-street, and I believe that H.R.H. the Princess Beatrice is now taking an active part in the revival of a school for tapestry at Windsor. If any of my lady hearers have not already paid a visit to the school at South Kensington, or to the unpretending establishment in Sloane-street, I would venture to recommend them to do so at once, as they are deserving the support of all those interested in the advancement of the art, an advancement which will be considerably increased, not only by the classes now being organised at the Royal School for the instruction of ladies in every kind of stitch in crewel, silk, and gold, but also by lectures that are to be delivered on style, composition, and colour. But whilst mentioning these establishments instituted for the purpose of re-introducing art-needlework for domestic purposes, I should, indeed, be withholding honour where honour is due were I not also to mention two other establishments also presided over by ladies, which have done and are doing, in a simple, unostentatious manner, a similar work for the advancement of the same branch of art, but for ecclesiastical purposes. I allude to the Sisterhoods of St. Mary's, Wantage, and St. Margaret's, East Grinstead. The business of a *conversazione* is talk, and the making and renewing of friendships. One word, therefore, and I have done. What a noble profession is that of architecture! To have the privilege of following in the footsteps of those who have left us the glorious cathedrals of Durham and Lincoln, of Canterbury, of Salisbury, Winchester, and Wells; the Abbey of Westminster and the monastic ruins of Yorkshire; our noble parish churches throughout the length and breadth of the land; the castles of Carnarvon, Conway, Warwick, and others too numerous to mention; the colleges of Oxford and Cambridge, and the stately homes and mansions; it is, indeed, I say, an honour to be following in the steps where the designers of these have trod. Nor are we at a loss to find in recent times men, also, who command our admiration and respect. Have we not had Sir Charles Barry and Professor Cockerell, who are no more, but will for ever be remembered as two of the brightest ornaments of the age, in the profession which we are about to follow? Good taste bids me stop here; but I doubt not that when the history of our art during the nineteenth century comes to be written, many an honoured name will be handed down to posterity. "Design with beauty, build in truth." Such is our motto, and, to quote the words of the late Mr. Elmes, "may these peaceful laurels, the enchanting, fragrant, and ever-blooming flowers

of painting, of sculpture, and of architecture, of music, of literature, and of poetry, entwine around our country's brows, and make our times the golden age of England."

Professor Kerr, responding to the invitation of the chairman, said: It is now no less than thirty years that I have been attending the meetings of this society from time to time. I have seen a good many presidents in the chair, inaugurating a good many sessions. I have had occasion, frequently, to congratulate the society upon the choice of its president, and to express my confidence in his guidance of the business of the year, and I am sure I may on this occasion congratulate the Association upon the choice they have made of Mr. Paice as their president, and express my conviction that he will do as his predecessors have done, namely, leave the Association a little better than he found it. There is one characteristic about this society which, to a man getting into years, is very charming, and that is that the Architectural Association is always young,—it never grows old,—never grows any older. Every year there is an accession of fresh young faces and fresh young hearts coming forward in the pursuit of the business of their lives; and if I add that these faces, being the faces of young men, bring with them a corresponding number of fresh young faces of young ladies, it will be admitted that a meeting of this kind is extremely refreshing. I think there is no prettier sight than to see a fair young woman, of perhaps sixteen years of age, opening her eyes very wide indeed in contemplation of some of these drawings, and wondering whatever it can all mean,—a very significant illustration, by the way, of public opinion generally with regard to matters architectural. You have given us, sir, in a very few words, and very expressively, your view of the basis upon which this Association was originally founded. You have said truly that it was established for educational purposes, — for purposes of study, at all events, — but you might have expressed yourself a little more strongly, for the reason of the foundation of this society was really this: that the young men of the profession found that they had provided for them by their seniors and by the authorities of the profession absolutely no means of education whatever. Now there are in Europe at the present day three systems of architectural education, the French, the German, and the English. The French is chiefly characterised as being that system under which a young man is most carefully and liberally taught a particular style of draughtsmanship, followed by and being part and parcel of a particular style of design. By means of this training the student is enabled at the close of his studentship to enter life a thorough designer in a certain class of design; but it is said, and said with some truth,—no doubt with considerable truth,—that this particular system of education fails in respect of certain other considerations than mere artistic design, which it is a pity that any system of education should fail to secure. The Germans, on the other hand, educate their young architects as they educate all their young men, upon a highly-elaborated scientific system, a system not necessarily a system of science, but a systematic "drilling in" of the subject to be taught. The Germans drill everybody as they drill their soldiers, very liberally indeed, and they produce in every other department the same perfection of mechanical execution which they exhibit in that particular department to which I happen accidentally to have alluded. The German system of architectural education, then, consists in a thorough scheme of lectures, lessons, and exercises, whereby in the end the young student has acquired all the knowledge that they can cram into his head. The defect of the German system is that it fails to exhibit that imagination which, to the Frenchman, is knowledge. And now I come to the English system, which is entirely different from the other two. If a man wishes to make his son a carpenter, he sends him into a carpenter's workshop, where he spends so many years in acquiring, from the seniors of his trade, the mode of performing the operations of that trade. Now, in the same way, if a man desires to make his son an architect, he sends him into an architect's "shop," where all he can expect is to acquire the mode of conducting the architectural "trade." That is a vulgar way of putting it, but it is plain language. Suppose we suggest the possibility of fusing these systems? Education is very much talked of now-a-days, and, be sure of this,—that before long it will be discovered that the professions of England are *under*-educated, and there will be a cry for superior education in other professions as well as our own. Now, the three European systems I have mentioned are all carried out in London, in different degrees. My friend Mr. Phené Spiers, the architectural master at the Royal Academy, has under him a class of students who are taught after the French mode. I do not say necessarily taught the French style of design,—that may or may not be,—but taught in the French manner, something after the *atelier* system. Mr. Spiers is thus enabled to turn out students thoroughly well grounded in that draughtsmanship and that design which is part and parcel of draughtsmanship, which students find so valuable for the practice of their art. Now, with regard to the German system, of education, it is this Association which, in its humble and energetic way, attempts to do what the Germans do. It has its classes, and in these classes the senior members are constituted the professors and the junior members are the pupils. I have no doubt whatever that, as far as it is possible to go, these classes are very successful, and do very good work; and that any young man who devotes his spare time to this Association will find at the close of his career in it that he has been to a very great extent educated for his profession by it. Now the English system of education is that which is patronised by the Royal Institute of British Architects. The Institute is not an educational institution; it is an association or club—a trade union, the *Times* calls it, founded for the purpose of enabling architects to back each other up, by fair means or foul, against the public. That may or may not be the way to put it, but we prefer to put it thus: The Royal Institute of British Architects has never fairly tackled the subject of architectural education. But next year there is to be a change. Those who intend to become Associates of the Institute, and who are conscious of not being worthy of it, had better apply at once; for in the course of a year or so they will not be able to join the Institute without going through the shocking ordeal of an examination. On the other hand, those who are desirous of doing credit to themselves, to this Association, and to the Institute, had better wait a little, and then enter the portals of the Institute as no one has ever entered them before,—with flying colours, claiming admission as a right. I have never sympathised with the cry that the Institute is not an educational body, and I am perfectly satisfied in my own mind that before long it must become an educational body, because, unless it takes up the question of education, it will presently be left without any question to take up at all. A great deal has been said about combining this Association with the Institute, but it has been discovered on both sides that a union of the nature suggested is absolutely impossible, and would be highly injudicious. I think the time will come when this Association and the Institute will be so far united as to co-operate in carrying out a system of professional education in a thoroughly academical manner, and I hope to see the day when the Institute, instead of disclaiming its educational responsibilities, shall have its lecturers, if not its professors, for whom this Association shall furnish classes of students, so that the new system, under which Associates are to be examined before admission, may be creditably carried on. In conclusion, the Professor expressed the hope that the coming year would be a year of increased prosperity and usefulness for the Association.

Mr. William White, F.S.A., said the only remarks that suggested themselves to him were on the subject of restoration, and these he should withhold, as he had arranged to read a paper before the Association on the subject during the session.

Mr. T. Roger Smith remarked upon the arrangements for conducting the various classes of the Association, and said that the large number of gentlemen engaged in that work could not fail to acquire beneficial business training in the course of performing their honorary duties.

Mr. E. C. Robins having made a few remarks, the formal part of the business of the evening was brought to a close.

Water Supply for Evesham.—The Town Council of Evesham have at length decided to adopt Messrs. Gotto & Beesley's scheme of water supply. The cost will be about 8,000*l.*, and the water will be brought from Broadway by gravitation.

ARCHAIC GREEK ART.

Mr. C. T. Newton, C.B., delivered the second and concluding lecture on "Archaic Greek Art," last Saturday evening, the 27th ult., at the College for Men and Women, Queen's-square, Bloomsbury, when there was a large attendance. A report of the first lecture has already appeared in the *Builder*.

Mr. Newton said he would now trace the art upwards from the period he brought it down to on the last occasion. If they could conceive of Greek art as a stream flowing onwards, deepening and widening as the several tribes and races united themselves with the main stream, then they must conceive that upward course which he was about to follow that night as something very different from the lower, as different as the Nile above the cataracts, passing from civilisation to barbarism, losing the well-known landmarks. In his last lecture he dealt with the various instruments of evidence valuable to the historian in regard to Greek art, and how it was developed, but as one travelled the downward course there was nothing to help the seeker, not even coins; and after they got beyond the Olympiads then began that weary journey which he could only compare to the wanderings of Livingstone or to quicksands of an uncertain chronology. Upon turning to Homer he (Mr. Newton) asked what he knew of the art of his time, and beyond all question a great deal of most curious information, read by their present archæological knowledge, was to be found in the poems of Homer relating to the art of his period. He described not only the work of foreign artificers from Tyre and Sidon, but something beyond the ordinary experience of mankind,—the wonderful working of that shield of Achilles, beaten out in metal. He also described other works in gold, the workers of which required a good deal of skill in the manufacture, but these matters were not so fully dwelt upon as the shield of Achilles, a subject which was quite sufficient for a lecture in itself. The main idea of the subject seemed to be a sort of microcosm, a picture of nature arranged in concentric circles. Outside of all was the great ocean flowing round the earth, the boundary of all things, which was the idea of the Greeks then of geography. The concentric circles represented the ordinary instances of human life—battles, pastoral scenes, peace and war, and incidents within cities. This work was beaten out, similar to what the French called *repoussé* work, of several metals, which were doubtless nailed on to the shield itself. In the "Odyssey," too, he described necklaces, earrings, and all manner of personal ornaments of women. The persons who made these things were almost always foreign artificers of the Semitic race,—men from Tyre and Sidon and from Cyprus, and though it was true that Greek artificers working in gold were mentioned, the impression that the poet conveyed was that they were inferior as craftsmen to others. The next question that presented itself, was, were there any extant works of art which they could refer to as of the same class as Homer, with a poet's licence, described regarding this shield of Achilles. He (Mr. Newton) said there were. In the first place, this concentric arrangement of circles, with the ocean round the various subjects within it, was, as it were, a period in certain bronze shields, which had been found in some tombs at Etruria, the final boundary being round as the circle of a wave pattern, which meant the ocean. They were not, however, so elaborate as the description given by Homer. The original of the specimen before them was in the Vatican, and was found in Etruria; it was a plate, silver gilt, and all round it were rows of subjects—there was a row of winged monsters, and in the middle was the representation of a lion devouring a bull and a vulture hovering over them. One of these plates was found at Rhodes; it was not Grecian, and the strong presumption was that it was the work of the Semitic race, and came from Tyre or Sidon, and might be the work of the very artists whom Solomon employed, for they were the greatest artificers of the time. His (the lecturer's) notion was that the source Homer got his Achilles' shield from was the treasury-houses of the kings in his time where he frequented. About this period everything in metal was hammered together with studs, and that was one of the characteristics of Greek art, and Homer referred to this constantly. He had before him a representation of one of the great lion weights, and upon it there was a Semitic

inscription. It was quite certain the Greeks had nothing to do with it, and that it was probably the work of a Phœnician artist. There was one great object which in a remarkable manner connected Greece and Italy with Phœnicia, and that was the representation of the shell before them. This shell was found at Etruria, while a similar one was found at Bethlehem, and fragments of similar shells were discovered at Nimroud and Camirus. Naturalists, however, told them that this kind of shell was only found in the Red Sea, or in the Mediterranean Ocean. This shell was covered with the pattern found upon it, and the people who brought it to Western Italy or Greece must have been the Phœnicians. Some people had observed that Homer never spoke of statues, images, or the gods at all, but referred to what they would rather call an idol than a statue,—the representation of a god or goddess worshipped as sacred, and placed either in the temple or within some sacred inclosure. Homer was silent as to the form of these early idols, but the Greeks told them that these were like pillars, with a head and two arms, the feet being close together. The body was not modelled at all, and there was no distinction between it and the lower limbs. Beyond that period these idols get ruder in construction. Many of these Dr. Schliemann found at Mycenæ, and he was pleased to designate them "ox-headed Juno," but he (Mr. Newton) did not agree with him, and maintained that they were rude symbols of the uplifted arms of these idols. Of course they were hungering and thirsting after dates, but he confessed he could not supply them. With regard to the bowls found at Nimroud, they might belong to about the year 606 B.C.; but Sir Henry Rawlinson and Dr. Birch were inclined to put them earlier. The earrings and the plates from Italy and Cyprus might possibly range from 600 to 650 B.C. The next question that presented itself was as to the date of Homer. Mr. Gladstone was of the opinion that he flourished about three generations after the Trojan war, but these quicksands of chronology were very uncertain. Herodotus thought Homer lived about 400 years after his time, and that would bring them to about 850 B.C. If that was the case they must suppose that his active imagination anticipated the onward progress of art, and described things far in advance of the art of his time.

Of course it was not unnatural that he (the lecturer) should say something of what he might venture to call the greatest discovery of their time—these antiquities at Mycenæ,—but there was a difficulty in the way. No person had been allowed to exhibit any drawings or photographs of the Mycenæ antiquities since Dr. Schliemann was in this country. His book would be published very shortly, and it had been thought desirable that his discoveries should not be anticipated in an accidental way by partial exhibitions; therefore, he (Mr. Newton), was not in a position to show them any of the antiquities that night, but he could point out certain things which would have a bearing on many facts on record. They were well aware that Mycenæ was the seat of a succession of semi-mythical dynasties. Unlike other Greek legends, the story of the house of Atreus was to them of peculiar and passing interest, not only because it was ennobled in song by the immortal tragedians, and was a favourite theme in Greek art, but because there still existed in Mycenæ remains which no person acquainted with Greek history could behold without being tempted to say that they were the remains of an heroic age. They consisted of a great gateway entering into the town, surmounted by two lions, with a column between them, a representation of which was now before them. In the sloping below the citadel were the sepulchral treasures and other scattered remains which were found there. They had been enabled to give a complete restoration of the ornaments of the entrance of the great treasury of Atreus, which had been restored by Mr. Donaldson. These lions did not remind them of anything in Greek art, but stood alone as monuments of an heroic age; therefore, ever since scholars visited Mycenæ, it had been assumed generally that these were the actual remains of the gigantic works built by the earlier kings of Mycenæ, and that the walls of the citadel were the very Cyclopean walls which the tragedians, writing in the time of Pericles, spoke of as being old in their time, Pindar mentioning them as being of "remote antiquity." Considering the magnitude of the work, the enormous size of the stone, and the extent of the fortifications, the presumption was that it could only have been executed in a period when there was a powerful monarch probably employing a good deal of slave labour. There always was a presumption that Mycenæ contained other remains of an heroic age, which Dr. Schliemann, who had wonderful tact in discovering treasures, had proved by finding out the five tombs filled with gold, worth about 4,000*l*. The strangeness of the art of the things which he found staggered archæologists, and there had not been wanting men who had stated that Dr. Schliemann had fabricated the tombs; while at Athens some persons stated that, to use an American expression, he had "salted" the tombs, which would be rather an expensive experiment, considering the worth of the gold which was found. All these doubts, however, had happily been entirely dispensed with, the objects discovered being perfectly genuine. At first he (Mr. Newton) was struck by the exceeding strangeness of the art, but the links of archæology had fitted in with great success. Pottery was one of the most valuable guides in tracing the history of art, and the pottery of Mycenæ was in this instance particularly useful. At Mycenæ there were two kinds of pottery found, one of which he would call the geometrical pattern, which they were familiar with elsewhere, and there was the floral pottery. The site of Mycenæ was covered with both sorts of pottery. In the specimens before them they had the Greek artists trying to reproduce on clay what they saw in nature, the fragments of the pottery being found in the earth immediately about the tombs. The cuttle-fish constantly recurred in the ornaments in gold found at Mycenæ, and it constantly recurred in vessels from Rhodes. In the British Museum there were a number of vases exhibited which were brought from Rhodes by Mr. Ruskin, and they all had a tendency to flowing lines. With respect to the date of these, it was not known. Dr. Schliemann's theory of the discoveries had an important bearing on this Greek art. He supposed that he had found the actual tombs of Agamemnon, Cassandra, and all the persons murdered with him and buried in the tombs, which was a startling proposition.

The publication of Dr. Schliemann's book would bring before them a number of new and suggestive facts. At the period of the death of Agamemnon, Egypt and Assyria were great and thoroughly matured empires, and perfectly civilised, with an art with fine characteristics and perfectly developed, already showing signs of decay, as well as were the two great empires of Egypt and Assyria. The phenomenon that it presented was that as soon as Greek civilisation began to rise, the stars in this ancient civilisation faded slowly in the sky, giving place to this new, strong, and vigorous luminary, destined in future time so entirely to eclipse them, that men had a difficulty in realising the length of time these great empires lasted and the wonderful civilisation to which they attained before Greek civilisation had begun. In conclusion Mr. Newton said, that at some future time he would lecture on Archaic Greek art of a later transition.

MONUMENT OF BISHOP SCHERENBERG AT WURZBURG.

In our account of this monument last week we omitted to mention one rather remarkable circumstance connected with it; it is that the inscription is in Roman lettering, and not in "black letter." This is the earliest example we have noticed of an inscription on a German monument in Roman characters. It runs as follows:—

HIC : IN : SPE : BEATI : RESVRECTIONIS
REQVIESCIT : QVOD : MORTALIS : EST
RODOLPHI : VON : SCHERENBERG
HERBIPOLIENSIS : EPISCOPI : D : D
VIXIT : PER : ANNOS : LXXXVII
OBIIT : MCCCCLXXXXV : E : I : P.

There are two other small inscriptions, but these are both in German black-letter characters.

Wellingborough Grammar School Competition.—Messrs. Bonner & Mills wrote last week to say our statement that Mr. Speechly's design was one of the three selected by the governors was erroneous. Mr. Speechly now sends us evidence that our first statement was correct. Messrs. Bonner & Mills should be more careful.

THE NEW VIENNA EXCHANGE.

For the last quarter of a century the Vienna Exchange has been on the move, in fact has, up to the present time, been living in apartments, having had to be satisfied with such scanty accommodation, at exorbitant rents, as is generally the lot of lodgers to receive as an equivalent for their money. Now, at last, after its period of hardships, it has a roof which it may call its own. It has, however, something more than a roof; for the great building, the subject of our illustration, situate in the Schottenring of Vienna, is a structure which attracts the eye from afar. The new Exchange, erected after the designs of the architect, Th. Ritter von Hansen, forms a completely isolated square 298 ft. 6 in. long and 325 ft. deep. Its area, consequently, is about 97,000 square feet, and nearly as large as that of the Imperial Opera-house (about 120,000 square feet). The cost of the latter amounted to six million florins (600,000*l*.); that of the new Exchange is about five millions (500,000*l*.), which amount was raised on preference stock in Vienna financial circles. Building operations were commenced in 1869, the work occupying six years and a half.

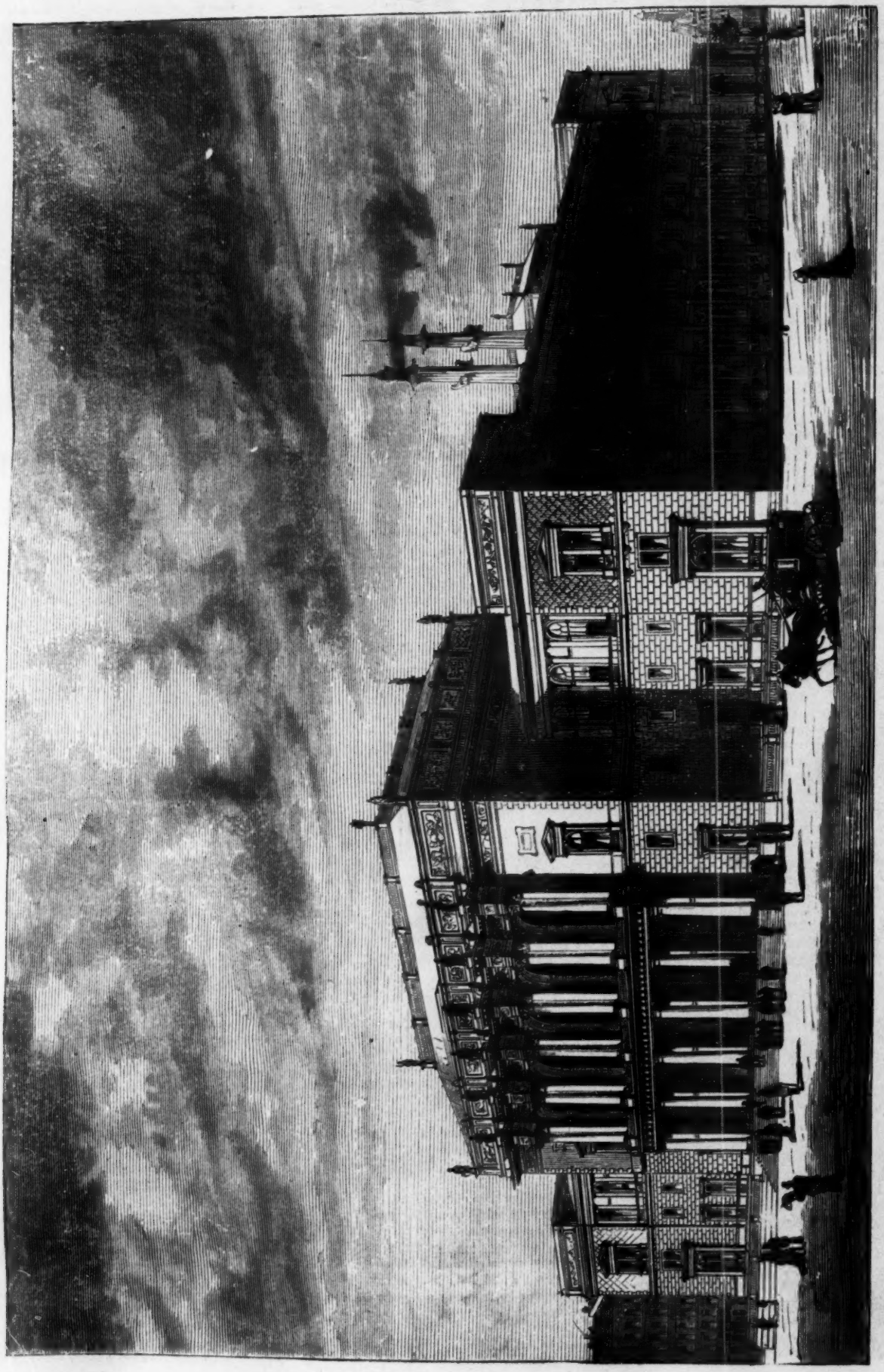
In the ground-plan the great Exchange room occupies nearly the principal space, with porches and vestibules in the fronts, flanked by two wings, each of which is joined to the great room. The projecting portal of five arcades with flyer-stairs, fronting the Ringstrasse, which rises in two stories of columns, and is surmounted by friezes adorned with bas-reliefs and attic balustrade, contains an open loggia on the first floor, and forms the principal entrance, pointing out the site of the great room and its two side aisles. The connecting wings on the right and left, somewhat retreating and kept lower, intimate the presence of four small courts (two on each side), as well as the connecting wing between the great hall and the side wings. The façades of the principal front and at the back exhibit the same architectural features, but the latter is without the decoration of the columns and the open loggia. Both portals are executed in greyish white Karst marble. The free-standing columns of the façade and those of the porch and the vestibule are of reddish white Trent marble, the borders, mouldings, and balustrades of the doors and windows of greyish-white limestone. The panellings of the outer walls are lined with red terra-cotta friezes, which impart to the building a glowing and warm tone. The attics of the façades are to be adorned with two similar colossal groups,—Neptune, with trident, in a *quadriga* drawn by sea-horses,—after the models of the sculptor Pilz, and with statues on the pedestals of the flyers.

On ascending the latter, and crossing the porch and the imposing vestibule, the great hall is immediately reached, round which are grouped in the side wings the numerous offices of the Exchange committee, the local and State telegraph, the brokers' room, the offices of the imperial exchange commissary, the police, the messengers' rooms, dressing-rooms, closets, &c. The *entresol* and the first-floor contain the offices of the bankers. In the first story, nearest the portal, are several large rooms, of which the one next to the loggia serves as the casino of the Exchange. In the lower story, besides numerous depôts, the warming and ventilating channels, &c., are located, to the right the restaurant, and to the left the corn and flour exchange.

The rooms of the lower story receive their light partly from the courts, partly through windows in the side façades, below the windows of the ground floor. The warming is effected by steam, hot air, and *calorifères*. The ventilation has been designed by Professor Dr. Böhm, whose system has already been successfully adopted in the Imperial Opera-house. The ventilators for supplying fresh air and expelling the vitiated air are worked by a steam-engine of 16-horse power. Two staircases, in front of which are covered approaches, lead to the first story; that towards the Ringstrasse offers in its purely classic forms an especially handsome perspective, and presents interesting solutions of constructive difficulties.

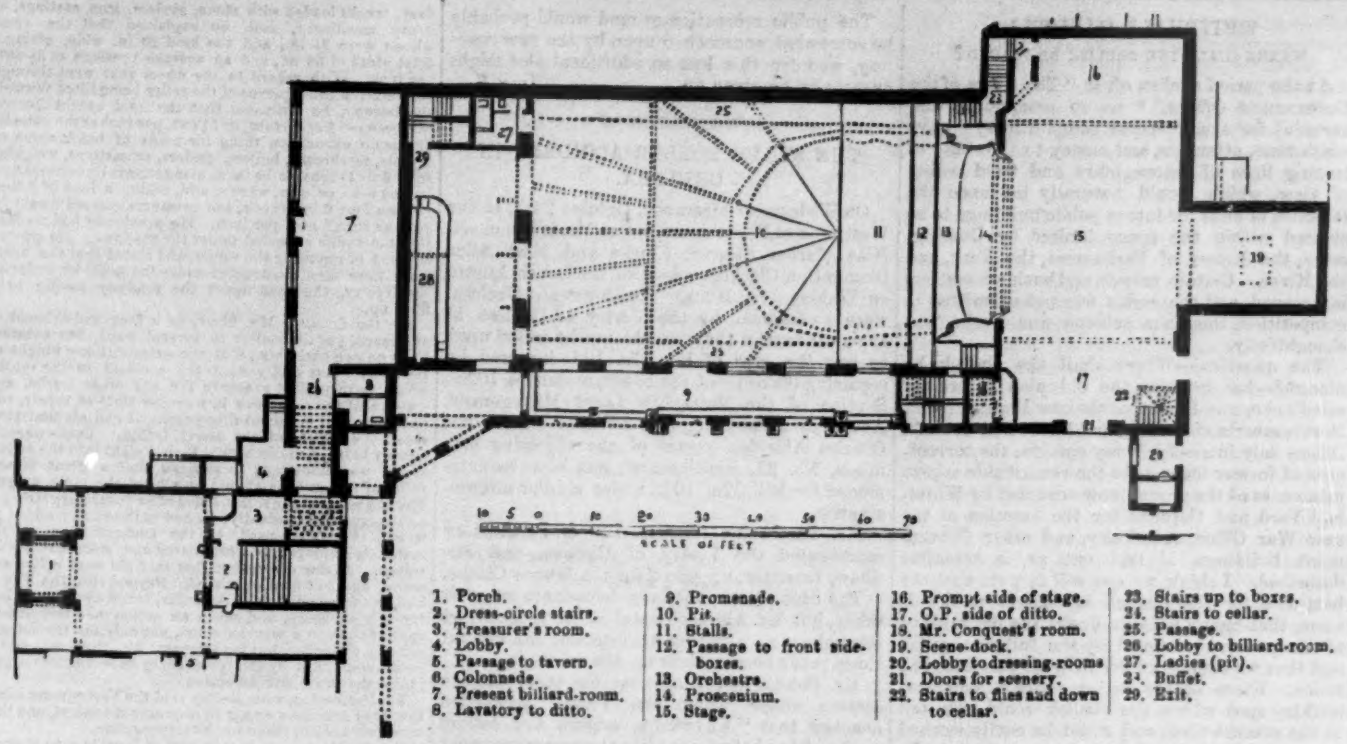
LIAS LIME: PAINT.

Sir,—Can any of your readers explain how to prevent walls stuccoed with lias lime being discoloured by vegetation, and also why after having been painted with four coats of best lead and oil paint the walls again become discoloured? Also, how to prevent paint from blistering on woodwork by exposure to the sun? BUILDER.



THE NEW EXCHANGE, VIENNA.—HERR TH. RITTER VON HANSEN, ARCHITECT.

THE NEW GRECIAN THEATRE' CITY-ROAD.——Mr. Robinson, Architect.



1. Porch.
2. Dress-circle stairs.
3. Treasurer's room.
4. Lobby.
5. Passage to tavern.
6. Colonnade.
7. Present billiard-room.
8. Lavatory to ditto.
9. Promenade.
10. Pit.
11. Stalls.
12. Passage to front side-boxes.
13. Orchestra.
14. Proscenium.
15. Stage.
16. Prompt side of stage.
17. O.P. side of ditto.
18. Mr. Conquest's room.
19. Scene-dock.
20. Lobby to dressing-rooms
21. Doors for scenery.
22. Stairs to flies and down to cellar.
23. Stairs up to boxes.
24. Stairs to cellar.
25. Passage.
26. Lobby to billiard-room.
27. Ladies (pit).
28. Buffet.
29. Exit.

THE NEW GRECIAN THEATRE, CITY-ROAD.—*Plan.*

THE NEW GRECIAN THEATRE, CITY-ROAD.

To the Eagle Tavern, with its music and dancing, and "Bravo, Ross!" was attached in 1841 a capacious theatre, with all accessories necessary for performances, and we can remember seeing in it the great tragi-comic actor Robson, and hearing a strange story of his parentage. Afterwards came in the late Mr. Benjamin Conquest, who enlarged and improved the theatre, and then again re-constructed and enlarged it. This was in 1858. Here his son, Mr. George Conquest, who succeeded him, has drawn large crowds,—too large, indeed, at Christmas time to be accommodated within the old walls. So now a new theatre has been built to hold, when closely packed, over 4,000 persons, and of this we give a view, looking towards the stage, and a plan. Our view, we are bound to say, does not convey an idea of the extent of the structure; it shows what may be called the dress-part of the house, leaving out of sight the deep dress-circle and huge gallery, which extend far away to the back. The site chosen was the spacious dancing-hall. This building stands at right angles with the old theatre. Entrances to the pit, boxes, stalls, and dress-circle are given from Shepherdess-walk, and visitors will be able to reach the various parts of the theatre without crossing the grounds, as was the case in visiting the old house.

To obtain headway for the raking gallery, four of the principals have had to be greatly raised; the last one about 20 ft. It is claimed, and we believe with truth, that from every seat in this gallery a good view of the stage is obtained; and an idea of its magnitude may be formed when it is stated that it will hold 1,600 persons. The ceiling, sides, and back are match-boarded, stained, and varnished. This gallery is approached by a stone staircase, 8 ft. wide. There are three exits independently of this, all constructed of fire-resisting material. On this level are four private boxes at each side.

The dress-circle is approached by a flight of stone steps, 10 ft. wide. Besides this, there are three extra exits, which can be used in case of need. At the back of this dress-circle is the saloon. The ceilings and walls on this level also are match-boarded, stained, and varnished. This match-boarding, indeed, is used all over the building where it can be substituted for plastering. This part of the house will accommodate about 800 persons. The pit will hold 1,700 persons, and the stalls, in addition, will accommodate 200.

The decoration to the fronts of the boxes is in raised carton-pierre, painted white and gold, picked out in pink and blue. Blue satin is introduced into the dress-circle front, and, like the proscenium, is in a style which will doubtless be deemed handsome by the ordinary frequenters of the house. A depth, including the scene dock, of over 60 ft., is available on the stage for spectacular displays.

Mr. J. T. Robinson, of Bloomsbury-square, is the architect. The work has been executed by Mr. John Garrud, of Spitalfields; the decorations were carried out by Messrs. Pashley, Newton, & Young, of Red Lion-square; and Mr. J. H. Watson was clerk of the works.

The New Grecian was opened to the public on Monday night last, October 29th, with a new drama, called "Bound to Succeed." For the sake of the enterprising, and, in his way, very clever proprietor, we trust this may prove prophetic.

"ROBIN HOOD."

On the 19th ultimo Mr. J. R. Planché, Somerset Herald, delivered a lecture entitled "A Ramble with Robin Hood," at the Vestry Hall, King's-road, in connexion with the Chelsea Literary and Scientific Institution.

Mr. Planché, in introducing his subject, said that at the risk of being unamusing, he intended to adhere to facts as far as they could be obtained, and to eschew fiction. He proposed to ramble through the fields of phantasy, in the hope of eliciting the information that there is a substratum of truth in the popular tales regarding Robin Hood. Bishop Percy had expressed his doubts whether Robin Hood ever was Earl of Huntingdon, and Mr. Thomas Wright, an antiquary of no mean repute, had gone so far as to thoroughly repudiate the existence of Robin Hood. Nothing is definitely known of the exact period in which he lived; the earliest of the dates assigned as the year of his birth is 1160, at Nottesley or Locksley, in Yorkshire (the existence of such a place had, however, been denied by some critics), in the Soane Collection. Other authorities make it as late as the time of Henry VII. or Henry VIII. The conjectures respecting the place of his birth were also as various, for the counties of Yorkshire, Staffordshire, and Warwickshire had each been cited as his native county. Much discussion had arisen regarding the question whether Robin Hood was descended from noble parents. Mr. Planché inclined to the belief that the outlaw was really an Earl of Huntingdon, his true name being Fitz-odo or Fitz-ooth, and that he was descended from a Norman family who came to England at the Conquest. The lecturer considered this theory was supported by references to the Harleian Collection, Leland, Stukeley, and Gale. Historic tradition represents him as having lived in the thirteenth century, we hear of popular rhymes about him in the fourteenth, and we have endless ballads and legends of him in the fifteenth. Proceeding to state the few facts tending to support his view that Robin Hood really had an existence, and that he was Fitz-odo or Fitz-ooth, Earl of Huntingdon, according to current tradition, Mr. Planché mentioned that undoubted proof has been obtained that a family holding the Earldom of Huntingdon existed in the twelfth and thirteenth centuries; also from a grant to the Abbots of Kenilworth, it is proved that a Robert Fitz-odo or Fitz-ooth was connected with Locksley in 1152 or 1153; and, moreover, that there was such a place as Locksley or Nottesley in Yorkshire, thus establishing a striking connexion with the oldest and most probable of the traditions relating to Robin Hood. The balance of tradition, therefore, supported by the authorities of the Harleian and Soane MSS., Sir Edward Cope, Fuller, &c., is in favour of the birth of Robin Hood having taken place in 1160; that he lived through the reigns of Henry II., Richard I., John, into that of Henry III., and that he died about the age of eighty-five years. Mr. Planché held that if the proof of these facts is spurious, he could only say it had been concocted with more care than such things generally were.

Dr. Phené, the chairman, in moving that the thanks of the meeting be presented to Mr. Planché for his deeply-interesting paper, said that he agreed with almost all the arguments used by the lecturer. He believed that we were very prone to ignore everything that we could not demonstrate, and very much disposed to ignore argument which ignores demonstration. He believed that there had been a veritable Robin Hood as well as a veritable King Arthur, who, if not living at the periods assigned to them, had nevertheless existed later, and that various people had at various times personified and lived the lives of the characters represented in the ballads and legends.

Mr. Bernal seconded the proposition, which was carried by acclamation.

The Crummock Water Scheme.—At a meeting, on the 23rd ult., of a joint committee, consisting of representatives of the Cockermouth and Workington Urban Sanitary Authorities and the Cockermouth Rural Sanitary Authority, it was decided that Messrs. Pickering & Crompton, of Whitehaven, should be appointed the engineers to carry out this scheme of water supply.

WHITEHALL GARDENS.

WHERE SHALL THE OBELISK BE PLACED?

At the period spoken of, in "The Story of the Government Offices,"* as so memorable and eventful for architectural competitions, I gave much time, attention, and money to the study of leading lines of thoroughfare and fixed points of view, which would naturally influence the selection of sites for future public buildings to be erected within the space limited by Charing-cross, the Houses of Parliament, the Park, and the River. Certain private and business matters intervened, and the result was not submitted in competition, though a scheme was worked out thoughtfully.

The question,—Where shall the obelisk be placed?—has brought the old plan before my mind's eye, and I find that the new Embankment, Northumberland-avenue, and Home and Colonial Offices only intensify, in my opinion, the correctness of former ideas as to the remarkable appropriateness of the ground now occupied by Whitehall Yard and Gardens for the erection of the new War Office, Admiralty, and other Government buildings, if laid out as is hereafter described. I think no one will dispute that the best site for the obelisk is difficult to decide upon, that many persons doubt the desirability of the position occupied by the full-size model, and that we cannot afford to erect this monolith twice. There occurs to my thought one most striking spot where the obelisk would look well at the present time, and could be easily worked into any scheme for future improvements. To find this spot it will only be necessary to set out a line from the centre of the Horse Guards, squared with the frontage line of Whitehall Chapel, and to measure thereon a distance of 650 ft., which will mark a place somewhere near the old river frontage at the top of the ancient Whitehall stairs. Just within this point it is proposed to construct, in dark-coloured granite, a solid platform 30 ft. square and 7 ft. high, with a blocking or parapet, 2 ft. wide and high on all sides, only leaving two openings, not more than 4 ft. each, with steps for access and closer inspection. Then in the centre of this to set a granite cube of 10 ft. (squared to the setting-out line) as a base on which to erect the monolith. It is presumed that by adopting this site engineering necessities would be reduced to a minimum, as by mooring the *Cleopatra* on this centre line; and, removing the Needle, base end foremost, with the help of inclined planes over the roadway and gardens, one operation would be sufficient to bring it to its permanent position. When erected here it would be visible above the railway on coming past the Savoy from the City, and in full view from any point between the Floating Baths and Westminster Bridge. This may at once be proved by observing an old elm tree now standing somewhat within the proposed spot, and not so high as the obelisk will stand when erected on its platform.

The War-Office and Admiralty.

I have made a plan showing more fully the suggestion for disposition of future blocks of buildings to be erected on either side of the centre line before mentioned for use as Government offices. The Army and Navy would probably be located, according to the space required, to the right and left from Whitehall, opposite each other. The Chapel Royal might with advantage be rebuilt on a site near Montague House, with college attached, and the Banqueting-room be restored to its original purpose, with a large official residence in connexion facing Westminster. The details of the external architecture and internal plan have not been in any way considered beyond the supposition that the work of Inigo Jones would naturally give the key-note for the Whitehall frontage, the Royal gateway, and the two quadrangles right and left; buildings beyond and fronting the river being of some bold uniform design, hereafter to be decided upon. The houses in Whitehall-place could at any time (either one side or both) be rebuilt or remodelled as part of the same scheme. The buildings at the railway end ought in any case to agree with those to be erected at the opposite corner by the Metropolitan Board of Works.

This arrangement, to the great relief of the Strand and other overcrowded streets, would provide a grand entrance to the Parks direct from the Embankment and Whitehall-stairs, and the whole could still be known as Whitehall place and gardens.

* See the *Builder*, p. 974, *ante*.

The public recreation-ground would probably be somewhat encroached upon by the new roadway, and for this loss an additional plot might eventually be given up. L. × S.

THE STEAM ROLLER ACCIDENT IN CHELSEA.

On Wednesday afternoon, October 24th, at the Westminster Police-court, before Mr. D'Eyncourt, Miss Marion Stewart Clarke and Miss Alice Clementina Clarke, owners of the house known as Waldegrave House, Smith-street, Chelsea, were summoned by the Vestry of Chelsea to show cause why they should not be called upon to pay the sum of 13*l.* 17*s.* 10*d.* incurred by repairing the cellar of the house, under the 102nd Section of the Metropolis Local Management Act, such cellar being in a defective state. Mr. Charles Aldridge, owner of the adjoining premises, No. 25, Smith-street, was likewise summoned for 13*l.* 17*s.* 10*d.* under similar circumstances.

Mr. Pemberton (Messrs. Lee & Pemberton) represented the Vestry of Chelsea, and Mr. Shaw, barrister, appeared for the Misses Clarke.

The case against the lady defendants was first taken, but Mr. Aldridge watched the proceedings throughout as affecting his interest, and several times made observations on the evidence.

Mr. Pemberton, in opening the case, said the section under which the Vestry proceeded enacted that "All vaults, arches, and cellars made, either before or after the commencement of this Act, under any street in any parish or district mentioned in either of the schedules to this Act, and all openings into the same in any street, shall be repaired and kept in proper order by the owners or occupiers of the houses or buildings to which the same respectively belong; and in case any such vault, arch, or cellar be at any time out of repair, it shall be lawful for the vestry or district board of such parish or district to cause the same to be repaired and put into good order, and to recover the expenses thereof from such owner in the manner hereinafter provided."

After some discussion, Mr. Shaw said there was no question about the ownership or the cost of the works.

Mr. Pemberton said the same question would arise in both cases. The facts were, that on the 25th of June last the steam-roller had been employed on the road in Smith-street, but at midday it ceased work on the portion in front of Waldegrave House. In the evening, however, the machine was being driven home at a rate of one mile an hour when the hind wheel of the roller next the channel went into a hole occasioned by the breaking of the coal-vault arch.

After a discussion as to the mode of proceeding before the magistrate,

Mr. Pemberton resumed opening the case, stating that it was the near hind wheel of the roller that disappeared through the vaults, and fortunately it was held by the body of the engine and the tender, so that it did not go right down. Had it done so, the consequences might have been very serious, for there was a heavy pressure of steam on at the time and there might have been an explosion. The driver of the engine went to see Miss Clarke directly after the accident, and she asked if there was any danger. He assured her that there was not, and then she said she had a brother, a civil engineer, who had warned her on the previous day that these vaults were not safe, and some accident would very likely occur.

Mr. D'Eyncourt asked whether the vaults were under the crown of the road or the footway.

Mr. Pemberton said they were under both.

Mr. D'Eyncourt wanted also to be informed which was the older, the vaults or the road.

Mr. Pemberton was unable to give this information, but thought they had both been made a long time, and were probably contemporaneous.

It was admitted that the age of the house was about fifty years.

The evidence called on the part of the Vestry was that of Piper, the driver of the engine, proving the accident, and showing that one of the defendants had a few minutes afterwards expressed a belief that the cellars would have fallen in; of Mr. Collard, the foreman of the roads, as to the mode of repairing the roadway; and that of Mr. Stayton, the surveyor to the Vestry, who stated that the roadway was repaired with fresh broken granite, having first been "pinned up" in the usual way, and was consolidated by the steam roller, weighing 15 tons. The rolling was completed, and as the roller was being driven away, at the rate of one mile an hour, the near hind wheel suddenly disappeared down the cellar of Waldegrave House. The driver at once put out the fire, and prevented all danger, by turning off the steam. The roller was extricated and removed, and on examining the vault the next day, he found that it extended 6 ft. under the roadway. He minutely examined the four vaults in front of the two houses, and found the two outside ones perfectly sound, but the two middle ones, which were partially destroyed, were very defective; the mortar had gradually become perished from age and the percolation of water, and they were, in fact, unfit to bear the continuous weight of ordinary very heavy traffic. With regard to the steam roller, although its weight was 15 tons, the weight was so distributed that it would not affect the road any more than very heavy traffic, like a timber-wagon, a dray, trucks loaded with stone, girders, iron castings, or heavy machinery, and he explained that the front wheels were 24 in., and the hind 20 in. wide, giving a total width of 88 in., and an average pressure of 3¼ cwt. per inch. With regard to the wheel that went through the vault, in consequence of the roller being tilted towards the footway, he estimated that the total weight thereon was between 5 and 6 tons, or 5½ cwt. per inch at the outside. It was no uncommon thing for loads of block stone or marble, machinery, boilers, girders, or castings, weighing from 6 to 20 tons, to be taken along streets on conveyances having 6 in. or 8 in. wheels, and, taking a load of 8 tons only on four 6-in. wheels, the pressures exerted would be not less than 7 cwt. per inch. He previously had no idea that the vaults extended under the roadway. He proved the cost of repairing the vaults, and stated that the headwalls were now constructed under the kerb by order of the Vestry, the part under the roadway having been filled up.

For the defence, Mr. Shaw, in a long and exhaustive argument, put the matter in several ways, but substantially on one basis, viz., that the extraordinary weight of the steam roller had caused the accident to the vaults, which were perfectly secure for any other traffic, and stated that the cellar was in a proper state of repair, and had been built for about fifty years. It had all that time stood the weight of the heavy traffic. Coal-wagons, heavily laden, had discharged their freight into the cellar, and it was monstrous to suppose that a great steam-roller of fifteen tons should only be of the same weight. The fact was that the roller, being of extraordinary strength and weight, had gradually crushed in the vault; added to which, the water used in the amalgamation of the materials employed, had percolated and made the mortar rotten. *It was a singular fact that the next cellar was sound, and had been uninjured.* Beyond this, the Vestry had, in the rebuilding of the cellar, taken away about half the original space, and when an action was commenced against them in a superior court, not only for the damage done by the roller, but for trespass, &c., they came to the police-court, and by this proceeding endeavoured to prejudice the as yet untried action.

Mr. Pemberton, interposing, said the Vestry must admit that they had done wrong in lessening the vaults, and they were prepared to make some compensation.

Mr. Shaw went on to say that it was idle to suppose that a great steam-roller of this description was ordinary traffic, and he cited several cases lately decided with respect to the liabilities of vestries with regard to the maintenance of roads and footways, and beyond that, argued that there was an Act of Parliament which regulated the passage of steam-engines over roads, and those regulations had not been observed in this instance.

Mr. Pemberton, however, showed that steam-rollers were specially exempted in the metropolis, under the Metropolitan Board's bye-laws.

For the defence, Mr. Rawlinson Parkinson, one of the four district surveyors of the city of London, was called to prove that the vault was a good one, but he proved that it might have been so fifty years ago; mortar was used instead of cement, as now used,—the latter being impervious to wet.

In cross-examination, he admitted that his examination of the vault was made some days afterwards, and was not particularly minute. He was not prepared to give any opinion as to the relative weights of steam-rollers and other heavy vehicles that had been mentioned.

The Court having sat an hour beyond its usual time, Mr. D'Eyncourt adjourned the case till November 1st, and said the question, to his mind, narrowed itself to the weight of the roller and its distribution, and he should like to have some independent evidence on that point; not that he doubted the evidence of Mr. Stayton, but it would be better to have another opinion.

SEMICIRCULAR CEILINGS FOR MUSIC-ROOMS.

Sir,—Your correspondent "T. R. S." (behind which initials it is not difficult to recognise one who has a special right to speak on the subject) is I think correct in saying that St. James's Hall does not in fact return any disturbing echo. In making the observation referred to I rather took the opportunity of drawing attention to the fact that in general a ceiling of this shape was not a good one for music, than asserted that it had an ill effect in this case. I know one or two instances where it has a most detrimental effect, and the fact that it accidentally is not so in St. James's Hall would, of course, be no argument for repeating the same construction.

It occurs to me that one reason for the echo which one would naturally expect from a ceiling of the shape of that in St. James's Hall not being heard, at all events to any annoying extent, may be that it is broken up and destroyed by the numerous perpendicular stalks by which the gas-lights are suspended from the ceiling. Supposing that this is the case, it would be interesting to know if the distinguished designer of the room adopted this arrangement in part for any such practical reason, or merely for the sake of the pretty effect which the hanging lights undoubtedly have. H. H. Statham.

*** Owen Jones introduced the small hanging lights as the outcome of his conviction that light in such a room should be widely distributed, not centralised, and without any reference to acoustical effect.—Ed.

PRESERVATION OF WOOD

Sir,—What is the best way to preserve a wooden tank from decay, when it is placed over a well containing liquor from larch bark? H.

BRICKS FROM SLAG.

In a paper on the "Progress of the Slag Industries during the last Four Years," * Mr. Charles Wood (Tees Iron Works, Middlesbrough), says:—At the Tees Iron Works there are three slag-sand machines and two slag-shingle machines working, and these machines have produced not far short of 100,000 tons, all of which has been utilised in a profitable manner.

In order thoroughly to test the value of slag made by my two machines for the various purposes just mentioned, it was thought advisable to form a company that should take up the manufacture as a specialty, and who could devote the time and attention so necessary to a young and untried industry. This company has now been in operation about two years and a half, and, like most new concerns when attempting the manufacture of a fresh material, it has had to pass through a severe ordeal. The difficulties met with have been numerous. The failure of one machine after another, the loss of time, patience, and money, would have ruined many private individuals, but thanks to Messrs. Gilkes, Wilson, Pease, & Co., and to a few friends in the Slag Company, I have been enabled to pass through the ordeal, and I am thankful to say that neither their confidence, money, nor time is likely to be lost; but that there is every probability that, with a larger output and a revival of trade, their capital will receive a fair dividend.

The Cleveland Slag Company's works are situated near the docks at Middlesbrough, and are now paying between 60*l.* and 70*l.* per week in wages. The most important part of their manufacture is slag bricks for building purposes, made from the slag sand, produced by the slag-sand machines at the blast furnaces. This sand is mixed with selenitic lime (General Scott's patent), with an addition of iron oxide, and is pressed in a machine hereafter described.

The next article of importance manufactured at these works is a kind of hydraulic cement, make from the slag sand, common lime, and iron oxides. Compared with Portland cement for hydraulic work or concrete, this is the most valuable product introduced for many years, whilst its price is not one-fourth, and the strength little inferior.

Concrete made from this cement, mixed with the shingle produced from the rotary table, is an excellent conglomerate for use in monolithic structures. With this material I have executed some very heavy blast-engine foundations,—in one case where brickwork set in cement had previously failed. The concrete is now standing in the most perfect manner. The cost of the concrete is only about one-fourth that of the brickwork, and experience has shown that it goes on hardening for months. The building of the Slag Company's works is executed entirely in this material,—the walls being nearly 80 ft. high,—they were built entirely by labourers, without a single bricklayer, and the cost of the work when finished, including superintendence, did not exceed 6*s.* per cubic yard. To give an idea of the strength of the walls, I may mention that on one or two occasions we have had to cut doorways through them, and it has taken two good men with steel bars and sledge hammers as much as four days to cut through a thickness of about 26 in.

Mortar is also made and sold in large quantities from a mixture of slag sand, and about 10 per cent. of common slaked lime, and it can be sold at the cheap rate of about 4*s.* per ton.

The introduction of these various products from slag at first met with a good deal of opposition and prejudice from architects and builders, but the remarkable strength and cheapness of the material soon compelled these gentlemen to admit their error, and I am happy to say that our demand in some instances is now more than the production. As before stated, the most important branch of the business carried on by the Cleveland Slag Company is the manufacture of building bricks, and, although the process is now very simple, it has been here that the greatest difficulties have occurred. There was no machine made in England that could work the material in the state in which it is produced at the furnaces, without previous preparation; and to prepare the material to suit the brick press meant that the cost of the bricks became so high as to exclude them from the market. A press had, therefore, to be designed that would work the slag sand just as it comes from the slag-sand machines directly into bricks, and this being accomplished, success was assured.

The bricks, when taken from the brick-press, are placed upon spring barrows, holding fifty each. They are then taken and stacked in sheds, where they are allowed to remain about five or six days, after which they are simply stacked outside in the weather to harden. The percentage of loss is very little, not amounting to two or three per cent. In fact, when once the bricks are upon the barrows, there is little or no waste. Each machine is capable of turning out about 10,000 bricks per day, and, since starting, we have sold about 4,000,000. Large quantities are shipped to London at a cost of 17*s.* to 18*s.* per 1,000 for freight; in other words, about 10,000 tons of slag sand have been consumed for this purpose alone. The following are a few of the advantages of these concrete slag-sand bricks, viz.:—Being pressed, they are perfectly uniform in size and thickness; they are much cheaper than ordinary red bricks, compared in weight with which they will weigh one ton per thousand less; then there is this further advantage, that there are no wasters or halves. For inside work there is a great saving both in bricklaying and mortar, especially when plastering, the walls being of a uniform thickness, and the bricklayers like them, because they can do more work with less labour, the bricklayer's labourer finding he has a ton per thousand less to carry, as well as considerably less mortar. Another remarkable property of the slag bricks is, that the joiners can drive nails directly into them without splitting, and thus, for skirting and doorwork, they are saved much trouble in plugging the walls; and, finally, the longer the bricks are kept the harder they get. . . . .

In addition to the works and progress made by myself at the Tees Ironworks and the Cleveland Slag-working Company's Works, I must not forget the labour and success obtained by my friend Mr. Henry Hobson, engineer at the Moss Bay Ironworks, Cumberland. Mr. Hobson has taken a path different, as far as I know, to any of his predecessors, inasmuch as in making bricks he first of all pulverises the solid slag, and uses no lime whatever. By this system the slag is taken from the solid slag balls, made from hematite Bessemer iron, and broken into pieces sufficiently small to pass under very massive edge-runners, where it is ground or crushed by the sheer weight of the runners into small dusty shingle. It is then passed by elevators into French burr mill-stones, and ground into powder.

* Read before the Iron and Steel Institute at Newcastle.

CHURCH OF NEW CLEE, GRIMSBY.

The church, the foundation-stone of which was laid on October 25th, by Mr. Grant-Thorold, is dedicated in honour of St. John, Apostle and Evangelist, and is designed with a nave, north and south aisles, a chancel with organ-chamber and vestry on the north side, and a western porch or narthex. The chief frontages are to the east and north, the former facing Rutland-street, and the latter the Cleethorpes-road. The chancel gable forms the most prominent architectural feature at the east end, and is filled with five large lancet windows, flanked at the sides by massive buttresses, and on the north side the high-pitched roof, which covers the nave and chancel, without any break in its length, the bell gablet at the west end, and the lofty clearstory with its range of lancet windows, give a height and dignity to the elevation. The vestry and organ-chamber form a continuation of the aisle, the monotony which might otherwise have resulted from this treatment, being boldly relieved by the gable of the organ-chamber, which breaks the long length and at the same time forms an effective feature in the design. In the aisle the lancet windows are divided by slightly projecting buttresses. At the east end is a doorway with moulded arch, and at the west end is the main entrance, a large pedimented archway finished with a cross. A smaller doorway forms the outer entrance to the vestry. The style adopted is Early English. All the doorways and windows of the church will be of Ancaster stone, and the exterior face of the walling is intended to be of brick, relieved by stone string-courses and ornamental brickwork. The porch or narthex at the west end of the nave is approached through the open archway which adjoins the street, and is entered by a large doorway, moulded, having columns with moulded caps, and is lighted by a triplet window at the south end. Opening into the nave from the narthex are two doorways, which form the main entrances to the church; these are square-headed, the tympanum of the arch in each being filled with ornamental brickwork. The church will be lighted from the clearstory on the north and south aisles, by the aisle windows, a lofty triple lancet window at the west end of the nave, and by the five lancets in the east wall of the chancel before mentioned. In designing the church, the requirements of public worship have been considered, and with this end in view the nave and the chancel, which forms a continuation of it, are kept of unusual width, and will be covered by an open-timbered roof 30 ft. in span, the aisles being somewhat narrow. The nave arcades, which are to be of stone throughout, are of two chamfered orders, with hood-moulds, &c., of wide span, and are supported on octagonal pillars, with moulded caps and bases. The nave and chancel are divided by a low septum-wall, and the floor of the latter is raised well above the ordinary level of the church so as to add a more imposing effect to the interior. The organ-chamber has a lofty arch next the chancel and another opening into the north aisle, and is so arranged that the organ may be projected into the chancel, and thus allow the sound to travel more freely through the church. The vestry adjoins it, and is entered from the chancel by a moulded doorway with cusping worked round the arch. In the sanctuary on the south side is the sedilia, with a richly-moulded arch worked on to projecting corbels, and surmounted by a canopy containing a cusped panel, and finished with a hood-mould crocketed and carved. The credence on the north side is of similar design, but without a canopy. An arcade of three arches, elaborately moulded, will form the chief feature of the sanctuary under the east window; the central arch contains the reredos, which is divided into three compartments, each being filled with a quatrefoil panel, and is surmounted by a deeply moulded and carved cornice; a retable shelf rests on carved corbels above the altar. The lofty walls of the chancel will be relieved by arcading, which is carried round on the north and south sides below the clearstory, and is supported on columns with moulded caps and bases. The church will give accommodation for 600 sittings. The seating throughout will be of stained deal, and the floors of the passages are to be laid with tiles. The pulpit and lectern will form effective features in the bay wall of the chancel, and the font is to be placed at the west end between the entrance doorways. The works are being carried out by Mr. J. M. Thompson, builder, of Louth, from the designs and under the superintendence of Mr. James Fowler, of the same town.

SUSSEX ARCHÆOLOGICAL SOCIETY.

The autumn meeting of this Society was devoted to a visit to Forest-row, for the purpose of inspecting and hearing some account of an ancient stone cist which had been found by Mr. Martin, embedded in the bank of a stream which runs through his meadow near the village, and also for the purpose of paying a visit to the ruined mansion at Brambletye, and the site of the still more ancient manor-house. Mr. Furse said the cist appeared to have been embedded in charcoal, and contained some bones, most of which crumbled to dust on being exposed. The bones were mixed with lime. It is about 4 ft. 6 in. long, and 3 ft. 6 in. in width, and rather more than 1 ft. deep internally. It is like a large house-sink, and opinions differ as to whether it was made of burnt clay or stone. Since it had been dragged out of the stream it has fallen asunder, but the broken parts fail to show an ordinary observer whether it is composed of clay or stone. Mr. Slack, in response to a call to give a statement concerning the article in question, said he was afraid the little he had to say about it would be rather disappointing, especially to the ladies and those who, on the strength of its being a memento of some British or Roman hero, were prepared to regard it with romantic interest. He found some carbonate of lime partially crystallised, so as to form granules, and after a search two or three fragments of bone were discovered. As to the lime, if the cist had been used for an interment, it might have been filled with quicklime, which was applied by the Romans and Roman-Britons, in order to more quickly decompose the body, and the quicklime might, in the course of time, have become converted into carbonate of lime,

partially crystallised. Then, with regard to the cist itself, parts of it being soft when found, some were inclined to think it was not stone, but, having examined it carefully, he believed it was a piece of sandstone which had become, so to speak, rotten from being exposed to the action of running water and air. No ornaments or fragments thereof were found, and as to the pieces of bone he had examined, the first was a small piece of marrow bone of mammalian, but he could not go further, except that he did not believe it was a human bone. A friend learned in comparative anatomy was also unable to state what it was. The other piece of bone found among the carbonate of lime had also been carefully examined, and had been ascertained by Mr. Stuart to be part of a sheep's "trotter." Of course it did not follow because human remains were not found that the cist was not used for the purpose of interment.

Mr. Roach Smith, to whom drawings and a description of the cist had been sent, said that cists of the Roman-British period were by no means uncommon, and this appeared to be one.

Captain Noble said it had occurred to him,—looking at the cist as it lay there, and considering the position in which it was found on the bank of a stream,—whether it had not been used to hold water rather than to inter anybody at all.

The visitors then walked over to Brambletye, and the Rev. Wm. Powell referred to the papers on Brambletye which have already been published in the collections of the society, and showed how little is known about the mansion beyond this, that the initials H.M.C. and the date 1631, on a lozenge over the entrance to the hall, are supposed to refer to Henry Compton, a ranger of Ashdown Forest, and his wife Mary, for whom the house was built in 1631. Having traced the ownership of Brambletye through the Keynes, St. Clares, Lewkners, to the Comptons, the rev. gentleman said the history of the place from 1631 was a blank, and it was impossible to conjecture how it became dismantled; but some thought it might have been struck by lightning, which had a peculiar affinity for that valley.

Mr. Somers Clarke gave some account of the architectural features of the ruins of the house, which appeared to have a similar character to that in ruins at Slaugham. Most of the workmanship was very good.

As the company issued from the ruins, a lady of the neighbourhood pointed out some masons' marks on the entrance. The builder's "square" and the "hour-glass" form are there to be seen. These marks are particularly interesting as occurring on a building of so recent date as Brambletye; they were seldom used after the beginning of the seventeenth century on the *face*. It was mentioned that copies of marks from Lingfield, East Grinstead, Balcombe, Steyning, Arundel, and numerous other churches, will be found in a paper printed in the *Builder*, under date March 27th, 1869.

THE LATE MR. JOSEPH DURHAM, A.R.A.

The lamented death of Mr. Durham, which took place on Saturday last at his residence, 21, Devonshire-street, Portland-place, will surprise his friends less than it will grieve them. He had been ill off and on for a long time past, and a recent sea voyage, taken under advice, only served to delay for a time the fatal termination. He was born in 1822, and was apprenticed to the sculptor, Mr. John Francis. Afterwards he worked for some time with Mr. E. H. Baily, R.A. ("Eve" Baily), for whom he always cherished an affectionate remembrance. A bust of Jenny Lind, exhibited at the Royal Academy in 1848, and afterwards reproduced, in miniature, in parian, first brought him into notice. In after years, when, having done something better, he was still spoken of as the sculptor of Jenny Lind's bust, it seemed an annoyance to him. A bust of the Queen for Sir Francis G. Moon, for presentation to the Corporation, followed, and a commission to execute a statue for the Egyptian Hall in the Mansion House—"Hermione." He afterwards produced "Alaster" for the same apartment. His design for a memorial of Mr. Frank Crossley, of Halifax, was selected in competition, and the completed statue, a fine work, was set up in 1860. About the same period occurred that which was the culminating point in his career, his success in the international competition for the memorial of the Great Exhibition of 1851. The design was afterwards elaborated under the eye of H.R.H. the late Prince Consort, and the committee of the fund subscribed for the purpose, and the completed memorial as now standing in the Horticultural Gardens at South Kensington may be pointed to as the best work of its class in London. We can only briefly mention some of his other works:—"Paul & Virginia," "The Fate of Genius," "Chastity" (a statuette), "Go to Sleep" (circulated as a statuette by the Art-Union of London, and very popular), a series of charming statuettes showing the youthful form as displayed in boating, cricket, and so forth, a classical group; "Hero over the Body of Leander," several drinking-fountains, tombs, and a large number of portrait busts; the last of these, still unfinished, in marble, is a bust of Mr. Waterlow.

Mr. Durham was of a genial and kindly disposition, and very popular with a large circle of friends in the earlier part of his career. He was elected an Associate of the Royal Academy in 1866, and appeared to be in the full tide of success. Reverse, however, came; and for some time before his death he had to grieve over the absence of commissions. It might not be valueless to inquire into the causes of his failure to realise all that had been expected of him, but we must leave this to other hands. Probably with a little more power of self-restraint he might have attained a higher position on the ladder of fame.

THE LOUGH MODELS.

The interesting ceremony of formally receiving from Mrs. Lough the valuable art-treasure bequeathed to Newcastle by her husband, Mr. J. G. Lough, the eminent sculptor, took place on the 24th ult., in Elswick Hall, where the numerous beautiful models have been arranged.

The collection includes models of nearly all the principal works wrought during a long, busy, and distinguished career by one who by a perseverance and self-denial, which amounted almost to heroism, obtained for his genius early recognition. One of the most conspicuous of the models, and one to which people will readily give attention,—because it is the model of the statue that first proved Lough to be a highly endowed artist,—is that of Milo. Another colossal figure which will attract special observation is "Samson." This work was executed as a companion to "Milo," and was the first production of the artist after he had become known. Both were wrought in marble for the late Duke of Wellington. A powerful piece of sculpture is also "Duncan's Mad Horses," produced in 1832. It is unquestionably one of the finest works, and with it the sculptor's name is in the minds of many most securely identified. Amongst the larger works is one which was exhibited at Westminster Hall in 1844,—"The Mourners,"—representing a knight slain in battle, his horse standing over him, and a female kneeling by his side. Amongst the most noticeable of the colossal statues are "Michael" (after he has subdued Satan), Milton's "Satan" and "Comus." There are also statues of Prince Albert, executed for Lloyd's; of the Queen, placed in the Royal Exchange in 1845; of the Marquis of Hastings, erected over his grave at Malta; of Dr. Broughton, late Bishop of Sydney, in Canterbury Cathedral; of George Stephenson, in Newcastle; of Lord Collingwood, at Tynemouth; of Southey, in Keswick Church; of Dr. Gilly, at Durham, &c. One of the most beautiful of the works is "The Expulsion," representing Adam and Eve leaving the place of their former happiness:—

> "The world was all before them, where to choose
> Their place of rest, and Providence their guide.
> They, hand in hand, with wand'ring steps and slow,
> Through Eden took their solitary way."

The strength of Lough's powers was shown (says the *Newcastle Courant*) in the numerous colossal works which he wrought; their sweetness is evidenced in the smaller and more refined imaginative creations. Lough was richly gifted with poetic feeling, which is specially manifest in not a few original fancies which he embodied in stone. He illustrated successfully many of the characters belonging to ancient and modern poets, and the fabled gods and gooddesses were also often the subject of his chisel; but he was equally fortunate in original efforts, such as "The Lost Pleiad," a charming work of which there is a model in the collection now in Elswick Hall. It is intended to symbolise the fall from her high position in the constellation of modern poets of that bright particular star once known to the literary world as L. E. L.—Letitia Elizabeth Landon. The idea was a happy one, and artistically carried out. A female figure rests upon a sphere encircled by the Hours; in her hand she lightly holds, as if it were to be instantly cast away, a starry crown newly taken from the brow; and the whole attitude is expressive of sorrow. This beautiful statue was executed in marble, and has never been publicly exhibited. A most interesting portion of the collection are the models of the series of Shakspearian characters executed full length in marble for the late Sir Matthew White Ridley, who was one of the sculptor's warmest friends and most generous patrons. The series includes "Hamlet," "Ophelia," "Macbeth," "Lady Macbeth," "Iago," "Edgar" (Mad Tom), "Ariel." Besides the marble statues, the models of some of which are in the collection, Lough, it may be mentioned, also executed for the late Sir Matthew White Ridley a series of elaborate *bassi-relievi* in marble, from "Macbeth" and "The Tempest," and several groups in bronze also from Shakspeare. In addition to those we have named there are numerous specimens of Lough's beautiful studies in lyric sculpture. There is also a large collection of monumental sculpture and busts.

DINNER TO THE WORKMEN AT EXETER CATHEDRAL.

On the 27th ult. the workmen who have been engaged in the restoration of the cathedral were entertained at dinner by the Dean and Chapter at the Globe Hotel. The Very Rev. the Dean presided, and over 100 sat down. Mr. Luscombe, the contractor, occupied the vice-chair.

At the end of the repast the Dean addressed those present, observing that he did so as all there had been engaged more or less assiduously in bringing to a conclusion the great work of restoring the cathedral. Therefore, with one will and one heart, they had been engaged together in a work of which they had reason to be proud and grateful. He thought thanks were due to almost every person engaged upon the work, and of course special thanks were due to those who had been specially engaged on it. These were those who had superintended the work, at the head of whom he placed his esteemed friend, Mr. Luscombe, whose assiduity, carefulness, and thoughtfulness, during the whole progress of the works, had excited the admiration, and he might say the gratitude, of the Chapter. He ought to place in conjunction with him his son, Mr. Edward Luscombe. He would not say all he thought respecting Mr. Edward Luscombe's ability, carefulness, and ingenuity; but would merely observe that, at every step of the work, he had been astonished, surprised, and delighted, at the amount of ingenuity and ability displayed by him on the many subjects entrusted to his care. When he recollected that, seven years ago, Edward Luscombe was little better than a boy, he must say that he had matured to a most wonderful degree, and that he had learnt his business so well that they might look upon him as an accomplished architect, and they might certainly look upon him as a most accomplished supervisor of works. Their thanks were also due to Mr. Drake, for the part he had taken in restoring the windows had excited universal admiration and approbation. Some excellent judges had been lately looking at the windows, and had said that the manner in which some of them had been restored showed great ingenuity and talent. The same might be said with regard to the windows which came from Messrs. Clayton & Bell. Day by day they found their cathedral becoming more and more attractive by reason of the beautiful works of art they had in their painted windows. Thanks were also due to the superintendent of the works, Mr. Widgery, for no matter how carefully things might be planned, they could not be carried out successfully unless there were a practical person to superintend them. When it was recollected to what peril those who had been engaged in the works had been exposed, poised as they were so many feet above the ground on lofty scaffolding, it was a marvel that there had not been more accidents to record. The fact that there had not, only showed the carefulness with which the work had been presided over, and the obedience to orders with which the men had carried it forward.

The Ven. Archdeacon Woollcombe, after alluding to the energy displayed by the workmen, said he wished to say a few words about the cathedral itself, and particularly with respect to the nave. Now the wash had been taken

away, and all the deformities removed, those who entered the nave saw it as it was 500 years ago. The great builder of this cathedral was Bishop Grandisson. He it was who transformed the old shorter nave into the nave of its present dimensions. With the exceptions of the fittings of the nave, and the beautiful glass with which the old windows were filled, they now looked upon it,—pillars, arches, roofs, ribs, and all its material parts,—as Bishop Grandisson did 500 years ago. That was a long time to look back, but they must remember that a portion of the cathedral was older than that. The towers were supposed to have been built in the thirteenth century. What a terrible affair it would be for the city of Exeter if the cathedral were converted into a great museum. What a terrible calamity it would be for Exeter if the churches,—between twenty and thirty,—were turned into smaller museums. They knew that there was a spirit afloat in this country which would desire to sweep away all these things, but he hoped he was right in saying that there was not one individual in the room who would say "Ay" to the designs of such men, and who would not join in the endeavour to hand down to posterity those ancient glorious edifices for God's worship which they had inherited from their ancestors. With regard to the windows, they had had several put in before the date of the restoration of the building, and that very day they had had put before them the design of another window. He was glad to see that the design carried on the idea which had long been entertained of restoring the windows according to a universal design, which in all its material parts was in accordance with the design of the old cathedral windows. There was an old box found somewhere in the upper part of the cathedral when the restoration began, which was full of glass, and Mr. Drake discovered that it was a portion of the ancient glass that decorated the windows in the fourteenth century. Archdeacon Freeman at the same time deciphered the fabric rolls of the cathedral, which were a long list of payments for work done, and he found that the windows of the fourteenth-century work were mainly made by workmen from Rouen. The fabric-rolls showed that year after year money was paid to the people of Rouen, but in the course of time English workmen, it was found, became the recipients of the wages for this work. With that power of acquiring knowledge which English workmen of the present day also possess, he supposed they learnt the art of window-making from the workmen of Rouen, and the later windows, if he was not mistaken, were executed by English workmen. Mr. Drake went over to Rouen to see if it was true that the windows in Rouen Cathedral were similar, as it was said they were, to those in Exeter Cathedral, and he believed he found that they were very much in accord. He would tell them how Exeter came in contact with Rouen. When William the Conqueror parcelled out the land he conquered, he gave the Manor of Ottery to the church at Rouen, and the dean and chapter of that cathedral enjoyed the manor at the time of Bishop Grandisson. The latter, however, thought it a great pity that the people in France should enjoy the proceeds of a manor in England, and he approached the dean and chapter of Rouen for the purpose of purchasing this manor. The ancient story was that he had to drive a hard bargain, but he at last succeeded, and then built Ottery Church, on the model of his own Church of St. Peter, and endowed it. But when Henry VIII. came, he took away the manor and left Ottery with only about 100*l.* a year, and the people and church of Ottery had suffered from that time.

THE ROUS MEMORIAL.

The Committee of the Rous Memorial have entrusted the execution of a bust of the late Admiral to Mr. M. M. Raggi, of Devonshire-street, Portland-place. Mr. Raggi was called upon to take a cast after death of the late Admiral, and the model was submitted to the Jockey Club at Newmarket. He will execute the same in marble; and when the work is completed it will be placed in the Club-room at Newmarket.

Pumps.—Messrs. Gwynne & Co. have now in their factory a pair of very large pumping-engines, each capable of pumping 100 tons of water per minute 17 ft. high.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The first ordinary meeting of the new session will be held on Monday evening, the 5th of November, when the president, Mr. Charles Barry, F.S.A., will deliver his opening address for the session.

The committee appointed to procure papers for reading at ordinary general meetings, announce that the following papers have been promised, and will be read, as under, during the present session:—

Nov. 19.—"On Middle Class Houses in London and Paris." By Mr. William H. White, Fellow.
Dec. 3.—"Architectural Notes on St. Alban's Abbey." By Mr. James Neale, F.S.A., Associate.
Dec. 17.—"On the Law of Easements." By Mr. Locock Webb, Q.C.
Jan. 7, 1878.—"On the New Metropolitan Markets." By Mr. Horace Jones, Fellow.
Jan. 21.—"On the Architecture of Norway." By Mr. E. T. Anson, F.G.S., Fellow.
Feb. 4.—"On the Rise and Fall of Wages in the Building Trade." By Mr. Thomas Brassey, M.P.
Feb. 18.—"On the Prevention of Corrosion in Iron." By Professor Barff.
March 18.—"On some Ancient Examples of Japanese Architecture." By Mr. Josiah Conder.
April 1.—"On the Ecclesiastical Architecture of Scotland. By Mr. R. Anderson, Fellow.
April 15.—"The Chemical Disadvantage of Sulphur Joints in Masonry." By Dr. Alder Wright.—"The vexed Question of Oak or Chestnut in Old Roofs." By Mr. Thos. Blashill, Associate.
May 20.—"Syria, the Cradle of Gothic Architecture." By Mr. John Whichcord, F.S.A., vice-president.
June 3.—"Popular Criticism as applied to the Architectural Profession." By Mr. T. Chatfeild Clarke, Fellow.

PAPERS PROMISED AT THE ARCHITECTURAL ASSOCIATION.

The following is the published list:—

Nov. 9.—Address from the President (Mr. Bowes A. Paice) and reports from the various classes, &c.
Nov. 23.—"Notes upon Cornish Churches." Mr. J. P. St. Aubyn.
Dec. 7.—"Gothic Architecture." Mr. J. J. Stevenson.
Dec. 21.—"On the Revival of the Later Styles of English Gothic." Mr. J. D. Sedding.
Jan. 11, 1878.—"On Ornament." Mr. Lewis F. Day.
Jan. 25.—"Restoration *v.* Conservation." Mr. William White, F.S.A., and Mr. R. E. Pownall.
Feb. 8.—Discussion upon the last paper, in which Messrs G. H. Birch, L. W. Ridge, and others are expected to take part.
Feb. 22.—Architectural Heraldry." Mr. F. H. Hummel, M.A.
March 8.—"The Decorative Treatment of Modern Subjects for the Decoration of Modern Buildings." Mr. E. Buckman.
March 22.—"The New Model Bye-laws in relation to Public Safety, Health, and Comfort." Mr. J. Douglass Mathews; "The Paris Building Laws." Mr. W. H. White.
April 5.—Discussion upon the papers of March 22, in which Messrs. Blashill, Plumbe, and Robins are expected to take part.
April 26.—Members' *Soirée.*
May 10.—"On Architectural Ornamentation." Mr. Hugh Stannus.
May 24.—"To Burgos and Back." Mr. A. Payne.
June 7.—"Prehistoric Art and rude Stone Monuments." Mr. T. Roger Smith.

THE FEMALE SCHOOL OF ART.

On Friday and Saturday last week the students' drawings to which prizes have been awarded were exhibited at the School, 43, Queen-square. Two national silver medals, five bronze medals, six Queen's prizes of books, and fifteen third-grade prizes, were obtained by the pupils at the last South Kensington competition, and the works which gained these distinctions were exhibited. Some valuable prizes were given by Mr. S. A. Hart, R.A., Mr. Woolner, R.A., and other artists. The Queen's Scholarship, value 50*l.*, was awarded to Rhoda Carleton Holmes, for drawings in water-colour of an Egyptian girl, and other sketches, and we cannot avoid expressing a little surprise that this lady's works obtained no recognition at South Kensington. The National Gilchrist Scholarships were adjudged to Miss Burnay and Miss Newton. Both these ladies exhibit studies of flowers, well executed. The Subscribers' Scholarships, value 20*l.*, have been awarded to Elizabeth Lovell for crayon heads, to Florence Reason and Catherine M. Wood for fruit, flowers, and birds. Angela Mary Marshall obtained the Queen's Gold Medal for a bust from life of a negro, and she also exhibits a statuette of a fisherwoman, which gained a bronze medal at South Kensington. The silver medals at South Kensington were gained by Alice Hanslip and Anne E. Hopkinson. Miss Gann, with six of the students, paid a visit to Rome not very long ago, and a number of the sketches made formed part of the exhibition of which we are speaking. As a whole, these could scarcely be called up to the mark. Three of the best pupils have been received as students at the Royal Academy,—Miss Alice Hanslip, Miss Ida Lovering, and Miss Catherine Benson; they will be missed in Queen-square.

THE PRESTON NEW RAILWAY STATION.

In a short time Preston will be able to boast of possessing one of the largest and most magnificent railway-stations in England, instead of the inadequate and inconvenient station which for several years past has had to serve for the enormous traffic, on the one hand, passing through the town between south and north, and on the other hand, between the densely-populated districts of Yorkshire on the east and Lancashire on the west. It is estimated that no fewer than 600 passenger-trains per day arrive at and depart from the Preston station, on their way to north, south, east, and west respectively, and Preston being almost precisely midway between London and Edinburgh and Glasgow, it has now come to be regarded as the most important through station on the London and North-Western system, Rugby, Crewe, and other well-known stations not excepted. For this immense traffic the London and North-Western and the Lancashire and Yorkshire Companies, who are the joint owners of the station, have at length been compelled to provide increased accommodation on a gigantic scale, the large works in connexion with which are now proceeding. It may be stated that the railway, on its course northwards, passes under Fishergate, the principal thoroughfare in the town, which is carried across the line by a lofty bridge, erected recently in place of a former dark tunnel, and the site of the station works now in progress extends to both the south and the north sides of this bridge. The station buildings consist of several distinct blocks, one of these containing, on the ground floor, the booking-offices and parcel-delivery offices, situated on each side of a large central hall. The upper floors of this block contain the offices of the managers, and others of the principal servants of the companies, together with subordinate clerks' offices. The street elevation of this block facing Fishergate, is in the Italian style of architecture, the lower portion being in Longridge stone, from the celebrated quarries near Preston, the upper stories being in buff bricks, with Longridge stone dressings. Another block, 163 ft. in length, and 35 ft. in width, contains waiting-rooms, together with station-master's and inspectors' offices, lavatories, &c. This block is in immediate contiguity to the platforms. A third block, 200 ft. long, and 35 ft. wide, contains large dining and refreshment rooms, the dining-room being 64 ft. long and 32 ft. wide, and very lofty, its height from floor to ceiling being 25 ft. The mural and other decorations of this apartment are intended to be very artistic. The two refreshment-rooms in this block are also very spacious, the first-class room being 52 ft. long and 32 ft. wide, and the second-class 30 ft. square. The kitchens and general culinary department in connexion with the apartments in this block will be in the basement. In a continuation line with the several buildings already named, a fourth block, 125 ft. long, and 35 ft. wide, will contain extra booking-offices, waiting-rooms, and telegraphic-offices. The roof of the station will be one of its principal features, being of exceptionally large dimensions, covering nearly the whole of the platforms and buildings, which occupy a ground area of more than five acres in extent. The roof will be in four spans, and in its broadest part will be 200 ft. in width, with a length of 1,000 ft. It will be constructed chiefly of ornamental wrought iron, supported on several ranges of cast-iron columns.

The dimensions and general arrangement of the several platforms will form one of the most striking features in this immense structure. These will consist of a main central platform, no less than 1,260 ft., or nearly a quarter of a mile in length, and 122 ft. broad at its widest part, decreasing gradually to a width of 48 ft. at each end. Immediately attached to this platform will be the booking-offices, dining and refreshment rooms, and lavatories; and in front of these buildings will be another platform, running parallel with the main platform; and between these again an intermediate platform, specially for the traffic of the East Lancashire section of the Lancashire and Yorkshire Company. The two last-named platforms will be 620 ft. in length, the intermediate platform being 28 ft. in width, and the other 17 ft. wide, the three several platforms covering an area of

126,000 superficial feet. The main approach to the station is carried on an incline, on brick piers and arches, and at the lower end of the approach there will be a covered cab-stand, where passengers will alight in front of the booking-offices. Underground passages, lined with glazed bricks, lead from one platform to another.

The contractors for the buildings and works are Messrs. Tulles, of Preston, and the estimated cost is nearly a quarter of a million sterling.

WARWICK WATER SUPPLY.

The long pending dispute between the Town Council of Warwick and Mr. Charles Hart, the contractor for the first part of the works in connexion with the new water supply for Warwick, has at length been arranged.

An action brought by the contractor for the recovery of damages for breach of contract, was at the last moment withdrawn by mutual consent, and an arrangement made for leaving the whole of the matters in dispute to arbitration. The contractor's claim amounted to 1,421*l.* 7s. 9½d., and a counter claim was made by the Council of 4,009*l.* 0s. 5½d.

In August of this year Mr. G. Berkeley, C.E., the arbitrator appointed by the President of the Institution of Civil Engineers, held an inquiry at Warwick, lasting five days, the legal points of the case being subsequently argued before him in London.

The arbitrator's award directs that the Town Council shall pay to the contractor 560*l.* 10s., and that there are no grounds for any counter claim. The legal expenses, and those of the arbitration, fall on the Town Council.

PEERAGE PROPERTY.

Sir,—Our reply sent on the 18th ultimo, canvassing nearly every one of Mr. Mitchell's statements (possibly at too great length), not having been inserted, you will perhaps allow us, on the principle of fair play, to forward a much shorter answer, lest it might be supposed we were confuted by his letter.

Firstly, let us say, then, that we find in the "Summary of Domesday Book" that there are more than *two hundred and sixty thousand* owners in England and Wales, irrespective of Scotland and Ireland, and of London, holding each one acre of land and upwards. Now, this is a small limit, but it shuts out all cemetery plots, all building society plots, all town and moor suburban plots.

Secondly. It is really ludicrous to suggest every farm labourer having four acres of land attached to his cottage. And what time would he have to work on a farm if he had four acres of his own to cultivate? An attempt by Fergus O'Connor years ago to establish a number of miniature farms with a few acres and cottage to each, proved a complete failure. As to "retiring" on four acres, that is again ludicrous.

Thirdly. The area of Woburn Park is under 2,000 acres, though it may be twelve or fourteen miles in circumference owing to irregular form.

Fourthly, to quote random newspaper paragraphs as serious evidence, because he has not seen them contradicted, is but poor political capital for Mr. Mitchell. Living within two miles of most of the Duke of Westminster's London estate, we can positively affirm it has not even nearly quadrupled in value in twenty-five years.

Fifthly. In France the subdivision of landed property has been long in force, and it results in this, that the land in France does not produce nearly so much per acre under democratic small holdings as in England under large aristocratic estates. Further, that the small freeholders in France are in practice encumbered with debt, and are obliged to half-starve themselves to pay their way. Such is the difference between theory and reality!

Sixthly. There is immense recklessness of statement in Mr. Mitchell's account of the taxation of "noble and squirearchical houses" in the country. He boldly affirms that where such owners are dominant in the parish there is not an instance of the houses being rated at more than a *tenth* or a *twentieth* of their actual value. That is inexcusable!

The principle of rating for the poor is not in proportion, truly, to what a house may have cost, or in proportion to its size; but according to what it is actually worth to let. Many a great house in the country, if offered to be let, would command but little rent, owing to the expense of keeping up, and the owners are in fairness rated at what their places are worth, not at what they have cost. Such is the law of the land, not the will of the peers. Curiously enough, we find in one of our private note-books on property the following memorandum, namely, that in 1874 the assessment to house-duty was for

Woburn Abbey on	£760	a year value.
Eston Hall	800	"
Stowe	700	"
Chatsworth	1,500	"
Blenheim	450	"

At the moment we cannot name on what authority these figures were given, but they were, doubtless, at least as reliable as Mr. Mitchell's, and furnish a singular commentary on his "facts."

We have seen something of the farming classes of this country, and heartily wish them well, but when "One from the Plough" comes forward with such extraordinary assertions these agriculturists may well exclaim in surprise, "Save us from our friends!"

Mr. Grimes's letter is more cautious and temperate, but when he speaks of Scotland being "depopulated," how does he account for the number of inhabitants steadily increasing all through the century, according to the Census?

H. & R. Powell.

*** With this the correspondence must end.

LEAD *versus* IRON PIPES.

Sir,—An article in the *Builder* on the subject of water-supply pipes, signed "H. U. McKie," made me think as to whether, during a past thirty years' experience among water services of all kinds, I had been deceiving myself, or had not some one been deceiving Mr. McKie; for I really had come to a conclusion that no material was so well adapted for the distribution of water throughout our best dwelling-houses as lead pipes, knowing that they do not corrode to any appreciable extent from any ordinary water passing through them. I am ready to admit that new pipes are subject to the immediate chemical action of water, and to pure water, as rain-water, more quickly than any other; but very rapidly an insoluble salt is formed on the inside of the pipe, sometimes in a few hours, and after such formation the water passes through the pipes from entrance to exit perfectly innoxious. So far as regards the lead; and any person taking the trouble to examine the thin interior crust formed on the pipe will find it hard enough to turn the edge of his penknife on attempting to scrape it off, which is not easily done, and the water takes less effect upon such crust than it would upon glass, and when once formed no further action appears to take place. As to the lead pipes corroding up, I have seen lead pipes, after having been used for a century and a half, that were no more corroded than those having been in use for six months, yet still possessing the thin indestructible coating, so far as water is concerned. Raising the question of a substitute for the imaginary poisonous lead pipe, what is offered to us? First, a tin lining to lead. I have had some experience in that, and find it inferior to lead alone, and I do not imagine the salts of tin to be much more healthy than the salts of lead; however, the case is worse even than that, for upon an examination of the tin coating of lead pipes after a brief use, and especially so where subject to changes of temperature, we shall find the inside full of reticulation, exhibiting the fact that the expansion of the two metals is unequal: consequently exposing fresh surfaces of both metals to the free action of the water, and that continuously with every change of temperature. Another experience was in connexion with galvanised iron pipes for street services, and a composition pipe for internal services, such composition being formed in a great proportion of zinc. Such pipes were used over a large district in one of the largest towns in the United States. Sickness prevailed in that district, and upon analysis metal or zinc poison was discovered to be the cause. The pipes were all exchanged and generally replaced by lead, when the sickness disappeared, and my experience teaches me that galvanised iron or zinc in any shape is dangerous when used as pipes, cisterns, or other receptacle of water to be used for domestic purposes, and many times have I traced the slight acid flavour of drinking-water to zinc receptacles of same; and I think their rapid corrosion is sufficient proof of their dangerous properties, so that however cheap the first cost, such pipes may ultimately prove very dear in cases of sickness and death caused thereby. In some towns of America galvanised iron pipes are forbidden to be used from sanitary considerations, and in the principal towns of America no iron house-services are allowed to be used, in consequence of their perishable qualities. Plain iron pipes, so far as health is concerned, are unobjectionable as to their poisonous qualities, but their durability is short, and they are very much more subject to leakage than properly fitted lead pipes, and cause much more trouble to repair, as one moment's thought will exhibit to a practical man. A burst in a lead-pipe makes a very small opening in the pipe, and requires but very little cutting away of casing or floors to make a joint round the same, although it takes a mechanic to do it properly; whereas when an iron pipe bursts it generally extends a considerable distance, sometimes to the whole length of the seam, and even if it extends only 3 in., you have to take out the whole length, which may be a long one, and often gives considerable trouble in cutting it out with a hammer and cold chisel, jarring things in general: so I claim for lead in case of repair all the advantage it deserves, if a tinker be not employed thereon, as is too often the case with lead, and very generally with iron pipe repairs. Iron pipes possess another disadvantage for private dwellings, which is the noise and clatter made throughout the house when any of the cocks are shut off suddenly. The time may come when, with a proper coating, iron pipes may be more advantageously used than at present, but such coating must possess an affinity for the iron itself, and not be subject to fracture from rigidity.

As to the use of cast-iron for soil-pipes in private houses and elsewhere, I only wonder that a general typhoid fever does not pervade the town throughout from causes which could easily be explained, but having extended my paper considerably, I will reserve the soil-pipe question to another time.

A. S. Chappell.

GRANITE IN THE WORKSHOP.

Sir,—Your interesting description of granite working in Aberdeen compels me to think that the good people of that city are a little behind the age. We do not read of the use of any of those machines that have been invented during recent years for cutting and polishing granite with extraordinary rapidity, many of which were exhibited at Philadelphia during the Centennial Exhibition.

The writer of your article speaks of a block of granite 5 ft. thick requiring twelve months to saw it into slabs. At Philadelphia one inventor used chilled iron, finely divided, instead of sand, under a saw of soft iron. By this device, granite was sawn at the rate of 3 in. or 4 in. per hour, and at small expense, the waste of iron being only about 3 lb. for every 2 square feet of sawing.

With this machine, therefore, the block of granite at Aberdeen, 5 ft. thick, and said to require twelve months to cut into slabs, would be severed in a week.

But the chief feature of almost all the machines was the use of the Brazilian diamond as the cutting agent, which is used for the teeth of saws and drills. There were machines for vertical sawing with frame and for circular sawing, the latter predominating. Most varied were the mechanical arrangements, but in three main points all united. Every saw-tooth was topped with a diamond; an enormous concentration of power and velocity was employed; and, lastly, a deluge of water ran upon the point of action to keep down the temperature and to subdue the sparks. Much refined ingenuity was displayed in some of the methods devised for setting the diamonds, so as to secure them in such a thin body as the saw, and, at the same time, to give them a good rear support quite out of the cutting surface of the top. The saws were about 6 ft. in diameter.

A great impression was made by the steady-going way in which the machinery sliced great masses of granite and stone into slabs of any thickness in an hour or two.*

I observe that the steam sand-blast is not approved of in the Aberdeen shops. As your informant remarked "that almost as much trouble was expended in dressing up the work and levelling the cutting afterwards as would have sufficed to cut the work by hand from the beginning," I can only conclude that he has only seen the process tried in a rough way, and that he will probably change his opinion if he reads your report (February 20, 1875) of Mr. Newton's lecture at the Society of Arts.

H. T.

Street Improvements in Liverpool.—At a special meeting of the Liverpool Town Council, there was a long debate on the subject of the proposed street improvements. The net cost of these improvements, after deducting upwards of 300,000*l.* (the value of surplus land), is estimated at 1,086,045*l.* A report submitted by the town clerk dealt with the question as to whether the necessary powers should be obtained by Act of Parliament or a provisional order. Alderman Samuelson moved the adjournment of the debate on the ground that the present time was inexpedient for disposing of a matter involving so heavy an expenditure. The motion was negatived by forty-two to five votes. The next subject was the town clerk's report, which, after discussion, was adopted by thirty-three to fourteen. The council afterwards proceeded to consider the several improvements. The recommendation relating to the high-level bridge in William Brown-street, the estimated cost of which is 227,786*l.*, was referred back. Proposals for widening Roe-street (32,934*l.*), Byrom-street (79,625*l.*), and Dale-street and Whitechapel (41,180*l.*) were agreed to.

* The first cost of one of these machines would soon be returned at Aberdeen in the saving of time and labour at present incurred.

THE NATIONAL GALLERY AND THE BRITISH MUSEUM AS ART-TRAINING SCHOOLS.

SIR,—Knowing the exaggerated value which is set upon the possession of a National Gallery and of a Museum of Antiquities by the British public, one would expect to find those institutions regarded as the chief art-training schools of the metropolis, and as such having professors attached to them to direct the students' studies. But one is astonished to find that in those two chief depositories of ancient art the art-student has, from their very first establishment, been entirely left to his own devices. This appears to me to be a most wonderful piece of inconsistency. Not that I by any means attach the same importance to such collections of works of art as *dilettanti*, who believe them to be absolutely necessary to the development of an English school of painting and sculpture. Such institutions are doubtless delightful resorts for the cultured, splendid repertories for the copyist, and excellent foundations for art-training schools. But to thoroughly utilise them for the latter purpose there should be masters of painting and sculpture appointed to watch the progress of the art-students who frequent them. We have, at an enormous expense, brought Greece and Italy to our very doors only to neglect the true husbandry of such possessions, and to complain of a scanty harvest.

W. C. T.

HENNING'S CASTS OF THE ELGIN MARBLES.

SIR,—I have read the letters in the *Builder* with some interest, as I have often spoken of Henning, and have had the pleasure of examining all the dies, not only of the Elgin Marbles, but also of Raffaelle's cartoons. The Transfiguration, &c., at the house of my friend, Dr. McOscar, who was most intimately connected with the deceased artist, and who was in consequence fortunately enabled at his death to save the dies from being scattered, and probably destroyed. The whole set now in his possession are most exquisitely engraved on fine slate slabs, as mentioned by your last correspondent, and represent the patient labour of many years.

They are all rendered with truth and vigour, as well as with perfect finish, and form a valuable exposition of what should be considered a national work. I only remember seeing one or two sets at our schools of art, none of which should rightly be without a set, though these would be now difficult to procure, as they were published so many years ago.

R. STARK WILKINSON.

LIFTS IN LAMBETH INFIRMARY.

The lifts in this building were made and fixed by Messrs. Waygood & Co. Three are to take up the patients in their beds, an attendant going with them, and these are also used occasionally to take up a number of dinners; but there is another lift in connexion with the dining-room that is specially intended for bringing up the food from the kitchen. The three bed-lifts are fixed in the well-hole of the staircase; they are made very strong but light, in order not to obstruct more light than possible. The cages are 7 ft. by 3 ft. 6 in. in the clear. By the old method, a patient being brought to the infirmary or hospital must be carried up flights of stairs at considerable pain and often injury, whereas in this case, the patient in his bed is placed in the cage, and the attendant who goes in with him, by pulling the hauling rope, is able to raise them both to the required landing, and by a break-rope keep the cage at a standstill till the patient is removed. These lifts have a patent safety apparatus, of good construction.

The food-lift is double, so that as one box is up being emptied, the one below is being filled, and being capacious, strong, and well fitted, will answer well the purpose for which it is intended.

FLATS.

SIR,—We constantly hear that when there is a real demand for any article of manufacture the supply soon meets it. But in the case of flats this rule has not held good. For the past five or six years I, and many persons of my acquaintance, have sought in vain for apartments built on this system, not in the morasses of Westminster and Pimlico, but on the healthy hills of Bayswater. Will no enterprising reader of the *Builder* take up the question? I shall be happy to send him the names of my friends who want flats, and I think common sense will assure him of a good return for his outlay. Mr. Daw, though his flats are in a stable lane, has never, I believe, had any difficulty in finding respectable tenants. Let me suggest such sites as may be found at the corner of Exhibition-road, in Seymour-place or Nutford-place, Edgware-road, or in the neighbourhood of Connaught-square.

PATERFAMILIAS.

THE MASONS' STRIKE.

SIR,—The letter of "C. B., One of the Deputation of Masons," requires some reply, which, by your leave, I will make as short as possible. "C. B." says that there can be no difficulty in the masons working different hours from bricklayers and others, because plumbers have always worked different hours. I think any person of common sense will at once see there is nothing in such an argument. Plumbers have no work in connexion with masons, and the well-known reason of plumbers being allowed shorter hours is the unhealthiness of their employment, they being always constrained to work in a stooping cramped position, and liable to inhale the fumes of molten metal.

The next fallacy of "C. B." arises from his mixing up the trades of carpenters and joiners. Carpenters at work in open buildings must of necessity work the same hours as bricklayers, plasterers, &c. The joiner has, as "C. B." states, a nice warm shop to work in, and so is unaffected by weather or darkness.

"C. B." denies the assertion that a skilful mason is made to eke out his time so as not to surpass the idle and unskilful, and asks, can a Master Builder point out any rule in our book to that effect? In reply, I say that the book in question is not available for the masters to see; and if it were, the chances are that no such rule would be found. But the practice is as I have stated, and many instances can be given of the masons striking because the master wished to test the amount of a man's work by measuring it.

The last matter referred to is the dissatisfaction of the Masons' Union at the course the master builders have adopted in seeking men from abroad, being unable to get them at home; and to this I reply that the masters had no other reasonable course open to them.

"C. B." also deplores the fact of many hundreds of men being compelled to subsist on the strike pay of 18s. per week. In this I heartily agree with him. I know a man with nine children who is starving on that allowance (his large family having made it impossible to save much), and yet that man might be earning his 10½d. per hour as fixer if the Union would allow him to work for his old employers.

A MASTER BUILDER.

TREATMENT OF BUILDERS.

SIR,—I read in the *Builder* "Justitia's" remarks on the treatment of builders, and hope the powerful aid of your columns will for ever stop such occurrences. I assure you some architects have much to answer for hereafter. My husband completely lost his health under similar treatment. The terrible suspense and anxiety was too much for him, and eventually, to save us from ruin, he was compelled to part with property at a sacrifice to meet his payments. It was truly distressing, meanwhile, to see his health gradually sinking. Justice overtook the Stauntons, but it appears to me that architects may thus kill builders by mental torture with impunity.

M. D.

FIREPROOF WOOD.

SIR,—In your issue of October 20th allusion is made to the fire at Inverary Castle, damage estimated at 15,000*l.* or 20,000*l.*

Do you know any contractors who make timber fireproof? I see in the "Year-Book of Facts" for 1877, page 191, wood can be made both fireproof and damp-proof. If the process be not too expensive it is very desirable it should come into general use; in fact, we should be inclined to try it in some building operations we intend to commence shortly.

P. WIDDOWS.

A Park for Lancaster.—Mr. Alderman Williamson, of Lancaster, has offered to buy forty acres of land on Lancaster Moor, and to give 10,000*l.* to convert the space into a public park. The Town Council accepted the offer. Mr. Williamson is stated to have served his apprenticeship as a house-painter.

MANCHESTER CORPORATION GASWORKS.

ON the 10th ult. the corner stone of the new gasworks which the Manchester City Council about eighteen months ago resolved to erect near Philips Park, was laid with some ceremony. Some idea of the magnitude of this undertaking may be formed when we state that the site embraces an area of thirty-nine acres, as compared with eight acres occupied by the Gaythorn station, and about nine by that at Rochdale-road; and that the total cost of the works, including land, is estimated at nearly 800,000*l.*, whilst the value of the land, buildings, and apparatus at Gaythorn is put down at 164,713*l.*, that of Rochdale-road station at 225,451*l.* The new works, when complete, are expected to produce 20,000,000 cubic feet of gas in twenty-four hours against 6,000,000 at Rochdale-road station, and 4,760,000 at Gaythorn. There will be four gasholders at Bradford-road, capable of containing altogether 7,000,000 cubic feet of gas, against 4,547,000 stored in five holders at Rochdale-road, and 3,093,130 in the six at Gaythorn. The works are being built in four sections, each of which is to be complete in itself and capable of producing 5,000,000 cubic feet of gas per day. The first of these sections is now in hand.

When the entire works are complete the corporation will be able to manufacture upwards of 30,000,000 cubic feet of gas per day. About 350 men are at present at work, and the operations are being pushed forward as rapidly as possible. The river wall, which is intended to protect the works from any possible damage by an overflow of the Medlock, is nearly completed, and has cost upwards of 20,000*l.*

The whole of the works are from designs by Messrs. Mangnall & Littlewoods, of Manchester, and will be carried out by the executors of the late Edward Johnson, to whom the contract was let.

GRAVING DOCK.

ON Wednesday, 17th ult., the centre stone of the invert for the new graving-dock now in course of construction for Messrs. R. & H. Green, of Blackwall, was laid with the usual ceremony. Messrs. Baker & Son are the contractors for these works, and Mr. H. B. Chapman engineer for the contractors.

The dock is 410 ft. long, and 64 ft. wide at the entrance; the depth at centre is 29 ft. 6 in. below the coping, and 24 ft. below high water. The side walls are of concrete faced with ordinary granite pitching. There is a depth of 14 ft. of lias concrete under the walls and bottom of the dock, founded on the blue clay.

THE LONDON BUILDING TRADES.

The Masons.—On the 25th ult. the operative masons on strike held a meeting for the purpose of considering the present position of the dispute. Mr. Broadhurst, the chairman, said large importations of foreign workmen had recently been made. These men had been engaged on the Law Courts alone. The strike committee were a week or two ago informed that a large number of American masons were coming over to oppose them. This would have been a serious blow, but it appeared that the agent who engaged the Americans said that there had been a strike, but it was now over. However, the men found out on the voyage the true state of affairs, appointed a committee, and now fifty-two out of the fifty-eight Americans had voluntarily signed the strike-roll, and were going to take the part of the operative masons in dispute.

Sixty masons have arrived from America per steamer *Elysia*, and on landing at Gravesend they were met by a deputation from the Master Builders' Association, and conveyed by special steamer to the Temple Pier, immediately opposite the Temple Buildings, where some of them have since been employed by Mr. G. W. Booth, the contractor. When the works stopped in July last, eighty masons turned out, the job being about half-finished.

After the newly-arrived Americans had partaken of dinner a meeting took place at the Sussex Hotel, which was addressed by several of the masters and men. Mr. Booth informed the men that there was plenty of work for them to do, and they could work either nine, ten, or even twelve hours per day if they chose. They could work as long as they liked. With respect to the works in progress in this country, there were many which would take three or four

years to finish, and any one of those present could earn 100*l.* a year for that period.

It is stated that in America several hundreds of masons are engaged, and will shortly arrive to fill up the large works in this country.

At the New Law Courts matters remain as they were. The whole of the sixty foreigners take their meals inside the premises, and the Germans only leave at night. A huge canteen has been set up in the basement of these large buildings, and Messrs. Ross, of Netley, have been engaged to supply the men with their meals.

Forty-three German masons arrived at Victoria Station on Tuesday, and were conveyed direct to the works of the New Law Courts, upon which they were engaged on Wednesday.

On Saturday evening a crowded meeting of the masons of London, unionists and non-unionists, was held at Cambridge Hall, Newman-street, Oxford-street. Mr. Broadhurst, who was elected chairman, commenced by asking his brother masons to be more than usually careful in observing order, and, referring to the alleged outrage upon the foreign workmen in the streets of London, he, on behalf of the committee, declared that no one connected with the strike had committed the outrage. In the course of a long speech he congratulated the men on strike, amid loud cheers, that fifty-two out of the fifty-eight Americans who had arrived the previous day had joined the Union. Mr. Nisbet read a proposed memorial to the Home Secretary with respect to the adverse action of the police towards the masons. The memorial prayed the Home Secretary to cause an inquiry to be made, as at present the protection of the police, which should be given to all alike, was being used in a manner to provoke a breach of the peace. The memorial was unanimously adopted.

At Bow-street Police-court on Saturday, Mr. Besley, barrister, applied to Mr. Flowers for a summons against Mr. G. W. Booth, of 24, Bedford-street, Covent-garden, under the following circumstances:—He said that his application arose out of the masons' strike, and that he applied on behalf of four masons, citizens of the United States, who had been induced to come to this country, for a summons against Mr. Booth for unlawful detention. The complainants were engaged at New York by Mr. Stanley G. Bird, a London builder, and secretary of the Master Builders' Association, to work in London for him for six months, under a printed contract, whereby they were to receive 9d. per hour. The men had also signed a supplemental agreement, which he had not seen, but according to which he believed the men agreed to pay back their passage-money by instalments, and allowed Mr. Bird to retain their tools for six months. Mr. Besley then stated that on arriving at Gravesend the men were met by Mr. Booth, who brought them to London. They asked him if he were Mr. Bird, and he said "No," and added that Mr. Bird had not got any work for them, and that they were to work for him. After two days' rest they went on Friday morning to some work being carried out by Mr. Booth, on the Thames Embankment. They asked if it were Mr. Bird's job, and on being answered in the negative, demanded their tools, which Mr. Booth's foreman, Mr. Besley alleged, refused to give up. Having read the printed agreement made by the men with Mr. Bird, and read the section under which the summons was applied for, Mr. Besley asked that a summons might be issued for unlawful detention. Mr. Flowers granted the application.

The Strike Committee agents were busily engaged on the 30th ult. as it became known that a number of workmen from Canada were on the way to London. A "look-out" for them was accordingly arranged among the pickets. The men were engaged by the agent acting for Mr. S. G. Bird, of the Masters' Association, at Montreal, and left Quebec on the 20th ult. in the Moravian steamer, of the Allan line. The party numbered thirty-eight. When they signed the contract as masons and stone-cutters, to serve in this country for at least six months, they were informed that a dispute existed in the building trade, but it is said that no mention was made of a strike, and the men readily consented to the proposed terms. On reaching Londonderry, however, a pilot came alongside the *Moravian*, and shouted "A strike in London!" This was the first intimation they had of what was going on, but after some warm discussion they agreed almost to a man to go to work. They were landed at Liverpool on Monday night, and left by the 10·40 p.m. train, viâ the Midland line, alighting at Kentish-town on Tuesday morning. Omnibuses were there in waiting for them, and they were taken to Fetter-lane, Fleet-street, where breakfast and dinner were provided for them. The men were to have transferred their services to Messrs. Dove Brothers, of Islington, who have several new churches in course of construction, and with the proposals made by that firm the Canadian masons expressed themselves perfectly satisfied. As the day advanced the men with their tools disappeared gradually, until on Tuesday evening, according to the *Daily News*, there was only one man remaining at the White Horse out of the thirty-eight fresh arrivals. Where the remainder had gone could not be ascertained. Messrs. Dove Brothers are said to have paid the passage money in each case. There are, it is understood, large numbers of unemployed masons in Canada, and another contingent of them is expected to arrive soon.

Several of the German masons engaged at the Law Courts were not forthcoming again on Tuesday. On Tuesday morning some members of the Masons' Strike Committee went down to the Docks, and saw off eleven German masons who had been working at the New Law Courts, and who were returning to their own country through the assistance afforded them by a German Society in London, and aided to some extent by the Strike Committee. Seven Italians engaged upon the New Law Courts works waited, on Tuesday morning, on the Strike Committee, and asked their aid to return to their own land. They represented to the committee that they were dissatisfied with their treatment, and desired to return to Italy, but were unable to do so through want of money. The committee did not consider the applicants to be qualified masons, therefore were unable to make any grant towards helping them homewards.

"A. H." writes to say that, owing to the present strike, the whole of the stonework intended to be put into the Government Post-office Savings Bank, Queen Victoria-street, has been cancelled, and cement dressings are to be used instead. Thus the working of a 15,000*l.* job is lost to the masons. What if this system should be adopted everywhere?

The Joiners.—An adjourned general delegate meeting of the London carpenters and joiners was held on the 26th ult. at the Spread Eagle Tavern, Tottenham-court-road. Mr. C. Burton, presided. The object of the meeting was to consider what action should be taken in reference to the resolution passed at the last meeting, asking the employers for an increase of 1d. per hour, and a reduction of working-hours.

Mr. Foster moved the following resolution:—"That we solicit our employers for an advance of 1d. per hour on our present rate of wages—viz., from 9d. to 10d., and a reduction of working-hours from fifty-two hours and a half to fifty hours per week; and that an effort be now made to settle the question by conference, in accordance with the resolution carried at the settlement of our movement in 1872."

Mr. Gowland moved, as an amendment, "That, in the opinion of this meeting, the present is not a fit time to ask for an advance of wages or a reduction of working-hours." After considerable discussion, the amendment was put, and received ten votes. The resolution was then put, fifty-four hands being raised in its favour. The chairman declared the resolution carried.

Mr. Nightingale proposed, and Mr. Try seconded the next resolution:—"That we, the delegates present, record our confidence in the United Trade Committee, and hereby empower them to carry out the foregoing resolution on our behalf." The resolution was ultimately carried.

VARIORUM.

"MIRTH" is the title of a new humorous sixpenny monthly just now commenced by Messrs. Tinsley. It is edited by Mr. H. J. Byron, and the first number contains contributions from Mr. J. R. Planché (Introductory Ode), Mr. J. Albery, Mr. E. L. Blanchard, Mr. G. A. Sala, Mr. R. Reece, Mr. H. S. Leigh, Mr. W. S. Gilbert, Mr. J. Hollingshead, Mr. G. Turner, and the Editor. If this can be kept up, success is assured, though we are bound to say some of the present contributions are feeble enough. The introductory ode, however, is itself worth all the money, and when the author invokes Thomas Hood as,—

> "Best humorist! Beneath thy wildest fun
> The kindliest current flows of human feeling,
> While splitting sides with some outrageous pun,
> Into our hearts insidiously stealing
> By tropes which seem intended but to tickle us,
> Extracting the sublime from the ridiculous,"—

he strikes the key-note which should regulate the productions of the rest of the composers.——As to the increase of the value of land in rural districts of England, the *Leisure Hour* gives the following note:—"In the churchyard of Claverdon, a village in Warwickshire, is a monument to one John Matthews, who died in the reign of Henry VIII., leaving land in the parish in trust to defray the cost of necessary repairs or enlargement of Claverdon Church. From time to time the rental of the estate has been inscribed on one side of the monument. It is a pity that there are such long gaps in the record, but, imperfect as it is, this table is of great interest as showing the rise that has taken place in the value of land in the last two centuries and a half. It must be remembered that a noble is one-third of a pound sterling. The table is as follows:—

1617	12 nobles.
1707	£12
1825	£78
1868	£130."

——*The Garden* continues its issue of coloured illustrations of flowers, and well maintains its character in other respects.——Cassell's *National Portrait Gallery* condenses what ought not to be forgotten as to the Whitworth Scholarships:—"Mr. Whitworth was created a baronet in October, 1869, and in the same year founded the Whitworth Scholarships, for the assistance and encouragement of young students of mechanical and engineering science. In the previous year—March 18th, 1868,—Mr. Whitworth wrote to Mr. Disraeli, stating that it was his desire to promote the engineering and mechanical industry of this country by founding thirty scholarships, of the annual value of 100*l.* each, to be applied for the further instruction of young men, natives of the United Kingdom, selected by open competition for their intelligence and proficiency in the theory and practice of mechanics and its cognate sciences. He proposed that these scholarships should be tenable, on conditions to be defined by a deed of trust regulating the administration of the endowment fund, during his life, and that thereafter the management of that fund, subject to the conditions specified therein, should vest in the Lord President of the Council, or other minister of public instruction for the time being. Mr. Whitworth's munificent proposal was considered by the Lords of the Committee of her Majesty's Most Honourable Privy Council on Education, and he received a letter from their lordships, in which they accepted his generous offer. . . . The princely nature of Mr. Whitworth's gift will be at once apparent when it is borne in mind that a sum amounting to nearly 100,000*l.* must be invested in order to produce the funds necessary for maintaining the scholarships of 3,000*l.* per annum; whilst the benefit thus conferred on the cause of mechanical science is simply incalculable. Not only for a generation, but for ever, are these scholarships intended to exist; and the name of Sir Joseph Whitworth will be held in veneration by grateful students long after the memory of many other equally eminent contemporaries has died away."——The Christmas Annual of *Once a Week* will be from the pen of G. Manville Fenn, author of "Ship, Ahoy!" &c., and, under the title of "Hush-a-bye, Baby," will deal with the "little strangers," welcomed and unwelcomed, in our midst.

STAINED GLASS.

Stanton-on-Peak (*Derbyshire*).—At Stanton-on-Peak Church a new east window has been erected by Messrs. Camm, Brothers, of Smethwick and Birmingham, the gift of Mrs. Thornhill Gill, and which was unveiled on the 28th ult. It contains the subject of the Lord's Supper in a canopied base running through the four lights, and above a large subject of our Lord's Baptism, surmounted by a canopy. In the tracery are emblems of the Lamb, the Dove, and the Holy Trinity. The donor has also presented communion-rails and gates of brass.

Yardley.—In the parish church of Yardley, Warwickshire, Messrs. Camm, Brothers, have recently erected a memorial window to the late Mrs. Simcox, of Hall-green, representing Christiana entering the valley and river of Death.

Percy Main.—A stained-glass window has just been placed in St. John's Church, Percy Main, by the vicar and his sisters, in memory of their parents. The window is Early English in character, and the subject is "Christ bearing his Cross on his Way to Calvary." The vicar has

also contributed four small windows in the west end of the church. The whole of the work was designed and carried out by Mr. Baguley, Newcastle.

Chester-le-Street.—The old parish church of Chester-le-Street has just received a new painted window, the gift of Colonel Johnson. In 1850, the parish raised subscriptions for the purpose of filling the east window with stained glass, and the work was entrusted to Mr. Wailes. The advancement in the art of painting on glass since that time, coupled with the fact that several very fine painted windows have lately been inserted, made it desirable (says the *Newcastle Courant*) to have a new east window. Col. Johnson at once offered to defray the cost, and the work was entrusted to Messrs. Clayton & Bell, of London. The window consists of four main lights, surmounted with tracery; the apex consists of a double trefoil light. This contains the figure of the Saviour, surmounted by tracery. Each of the four lights is divided into an upper and lower. The north light contains the Annunciation, or the angel appearing to the Virgin. The next light contains the Nativity. The third light depicts the visit of the wise men. The fourth light contains the "Presentation in the Temple." The four lower lights illustrate incidents in the history of St. Cuthbert, one of the patron saints of the church.

Chagford.—A stained-glass window has just been erected in the south aisle of the parish church, to the memory of the late John and Susanna Berry, by their daughters, Elizabeth L. Cox and Susan Bovey. The subject is "Christ blessing little Children." The artist is Mr. W. H. O'Connor.

Bath Abbey.—A new stained-glass window has been placed in the Abbey Church, Bath, by Mr. Brooke, of Hampstead-heath, in memory of his parents. The new window is on the east side of the south transept, and is by Messrs. Ward & Hughes, of London, who have supplied one or two others to this church. The tracery contains representations of the Good Samaritan, the centre light showing our Lord blessing little children, and the other four lights various acts of mercy. In each of the four lights there are two subjects.

COMPETITIONS.

Stafford Market.—There were thirteen sets of plans sent in, out of which two were selected by the Markets Committee to bring before the Council for deciding as to the award of premiums—first, 75*l.*; second, 25*l.*, as per advertisement. The two plans selected by the committee, after many hours' examination, as being the two best, and of almost equal merit, were "A. B. C." (Messrs. Beaumont & Bare, Corporation-street, Manchester), and "Staffordshire Knot" (Mr. N. Joyce, Stafford). These were placed before the whole Council to decide as to first and second; but, strange to say, the Council took their own course, and "Mark Well," with a device (Mr. T. Chalmers, Stafford), was ultimately decided upon as being entitled to the second premium, "Staffordshire Knot" being placed first.

Southport Covered Markets.—The Markets Committee have recommended to the Council that in their opinion the design bearing motto "Regardez-moi" is entitled to the premium of 100*l.*; "Sanitas" to the second, or 50*l.*; and "Experientia Docet" the third, or 25*l.* The sealed envelopes containing the authors' names will not be opened until after the next meeting of the Council. Much dissatisfaction is expressed at the way in which this competition has been conducted. Two of the competitors,—"One of the Selected," and "Honesty the Best Policy,"—write to the *Southport Daily News* describing the competition as "a complete farce," and allege that the secrecy supposed to insure fair play has been abused by some of the competitors who had "friends at court" letting their intended mottoes be known beforehand.

Tottington (near Bury) Church.—The committee for the erection of the proposed new Church of St. Mary, Hawkshaw, have accepted the designs submitted in limited competition by Messrs. Maxwell & Tuke, of Bury. The estimated cost of the building is a little over 3,000*l.*

Engineer to the Corporation of Salford.—At a meeting of the Town Council, held on the 31st ultimo, it was resolved to appoint Mr. Arthur Jacob, of Barrow-in-Furness, to the office of Borough Engineer. There were 68 applicants.

ABSENCE OF HOARDINGS.

BOWDEN *v.* SERFF AND ROWLAND.

This case came on for hearing in the Brompton County Court the other day, before Mr. Serjeant Wheeler. The action was brought by Mr. Henry Bowden, described as a "monumental plasterer," residing in Rawlings-street, Chelsea, to recover damages, which he assessed at 50*l.*, from the defendants, who are builders, of Sloane-street, Chelsea.

Mr. W. Doveton Smyth appeared for the plaintiff, and Mr. Vallancy Lewis for the defendants.

The plaintiff's case was that at half-past twelve on the morning of the 30th of March last he was returning home, and when at the corner of Pavilion-road and Sloane-square he trod on a stone outside some buildings which the defendants were erecting. This gave way under him, and he fell into an area into a quantity of filth, spoiling his clothes, and sustaining severe injuries. In consequence of these injuries he was under medical care for some weeks, and was prevented from attending to his business. For the pain and suffering he claimed 25*l.*, and the remainder of the claim was made up for medical expenses, loss of business, necessary cab hire, and new clothes. The case was before the Court on a former occasion, and Mr. Glyn, barrister, for the defendants, then contended that the place was a public thoroughfare, and that the parochial authorities, if any one, were liable.

The judge decided to view the *locus in quo*, and afterwards expressed his opinion that the defendants were liable, and it was only a question of damages.

Mr. Smyth said the defendants were, in fact, on the horns of a dilemma, for even assuming, for the sake of their argument, that the place was a public one, then they had not complied with the terms of the Metropolis Local Management Act by erecting a hoarding which would protect foot-passengers. By the 121st section of that Act they were under a heavy penalty for this neglect.

Mr. Lewis cross-examined the plaintiff, chiefly with a view of mitigating the damages, and the judge, at the conclusion of the case, said he should give the plaintiff a verdict for 35*l.* and full costs.

LIGHT AND AIR CASE.

SPOTTISWOODE *v.* GODBOLD.

In the Chancery Division of the High Court of Justice, before Mr. Justice Fry, Mr. Willis Bund, on behalf of the plaintiffs, moved *ex parte* for an interim injunction to restrain the defendant from carrying up some new buildings so as to obstruct the light and air enjoyed by the plaintiffs. Plaintiffs are the Queen's printers, who have a branch office on the west side of Chancery-lane. On the eastern side are being erected some extensive buildings, in place of some small houses and shops, which some years ago were pulled down. These old buildings, it was said, were 43 ft. high, and the plaintiff had discovered that the new buildings were to be of the height of 63 ft. The additional height, they alleged, would interfere with their light and air, especially on the first floor, which was used by *employés* engaged in drawing plans for lithography. The width of the lane at the point in dispute was, from house to house, 37 ft.

On the plaintiffs giving the usual undertaking as to damages, his lordship granted an interim injunction restraining the defendant from erecting his buildings so as materially to interfere with the plaintiffs' light and air.

PRESERVING FENCE-POSTS.

On this subject the *Journal of Forestry* has the following:—The proper seasoning of timber before being used in any structure is far more important than the season of the year it is felled in, kind of timber used, or preventives employed. There are paints, washes, and heterogeneous steeps recommended for preserving posts, but each are comparatively costly, and only partially successful. One great objection to the application of solutions externally rests on the fact that the sap being confined accelerates decomposition in the interior. Most foresters must have observed this. What I would recommend with fencing-posts is, the materials, when felled, to be directly sawn into posts and stored under sheds thoroughly ventilated, where they will remain at least a year exposed to "sun and wind." The neck or part between wind and water of each post should be slowly charred over a strong fire,—slowly, because our principle means heating the timber thoroughly to the heart, so as to extract any moisture which may be still lodged at the centre, and hardening a crust on the surface of the posts. Afterwards, to prevent the posts absorbing water, they should be well coated with coal tar, having its acid destroyed with fresh quicklime. The tar should be thoroughly boiled to evaporate all watery matter, and applied boiling hot. A large tank, holding the posts set on end, and filled with the scalding tar from a boiler, answers the purpose very well. Of course, the upper half of the posts can be painted when placed *in situ*. I am fully convinced coal tar, properly applied to thoroughly seasoned timber, is far more effectual in preserving posts than creosoting poisoning, kyanising, or all the paraphernalia of iron prongs, sheet-iron wrappers (an American invention), &c. One great recommendation in favour of the above process is that it requires no skilled labour, and the cost is a mere trifle.

DENHAM, NEAR UXBRIDGE.

New schools have just been completed upon a site of half an acre in Cheapside, Denham. They consist of separate school and class-rooms for boys and girls, and infants' school, with master's residence and offices, and will accommodate 240 children. The materials used are stock brick, with dressings of red brick and Box-ground stone; the roofs are tiled. There is a bell turret over the lobby of girls' schools. Internally the woodwork is stained and varnished, and the walls are painted up to the level of window-sills. The school and class rooms are heated by the "Manchester school grate," and care has been taken to provide for proper ventilation. In the infants' school are two galleries of unequal size, and a group of desks for the older infants. The boys' and girls' schools are fitted with "Sidebotham's patent reversible desks and benches," and the class-rooms have proper galleries. There are separate playgrounds, with boundary-walls and iron gates. The contract was taken by Mr. F. Taylor, of Uxbridge, for 2,340*l.*, and there have been no extras. The architect is Mr. R. Groom, of London.

CHURCH-BUILDING NEWS.

Lodge.—The *Oswestry Advertiser* reports the proceedings in connexion with the laying of the foundation-stone of the new church of St. John, Lodge. The site of the church is at the corner of what is known as the old road to Gobowen. The ground set apart is an acre in extent, rather more than half of which will be formed into a burial-ground, whilst the church and vicarage will occupy the remainder. According to the plans of the architect, Mr. H. Kennedy, of Bangor, the church will be built in the Early Decorated style, and will consist of a nave, chancel, north porch, and robing-room, and at the west end the building will be surmounted by a bell-turret with space for two bells. The internal fittings will be of pitch-pine, varnished, and the roof of stained pitch pine, and covered with slates. The church will be built of stone, with dressings from the Garddon Lodge Quarry. When completed it will afford accommodation for upwards of 250 persons. The total cost will be 2,100*l.*, and the work is contracted for by Mr. T. J. Humphries, builder, Bangor.

Claverdon.—The Bishop of Worcester has reopened the church of Claverdon, near Stratford-on-Avon, which, with the exception of the tower, has been entirely rebuilt, the old one being described in his lordship's speech at the luncheon as being "as bad a church as there could be." The offertory was about 80*l.* The architect was Mr. Christian.

Bagendon.—The small parish church of Bagendon was reopened on Sept. 30th, after having been provided with new roofs for nave and aisle. Internally the nave has three semicircular arches of Norman work dating from about A.D. 1150, while externally it bears the appearance of the Perpendicular architecture of the time of Edward IV. In the middle of the fifteenth century, when this church belonged to the chantry of the Holy Trinity in the parish church of Cirencester, the same persons seem to have been benefactors of both; for on the brass of William Prelatte, which lies in the chapel of the Holy Trinity, he is described as a most special benefactor of it; he is represented between his two wives, of whom the second was Johana, relict of John Twynyho, of Cayford. Some years ago the timbers of the nave-roof had been shortened and the pitch consequently lowered. Latterly there had been unmistakable proofs that a new roof was necessary; and the nave and aisle have been covered with the best pitch pine, after the model of the old roofs. The work has been done by Mr. W. H. Wood, of Cirencester. A local paper says it was found necessary to rebuild the north wall of the aisle; but there is much to be done before the church can be said to be restored. One peculiarity still remains: the church is built in

the very lowest part of the valley, below the level of the brook, and is subject, consequently, to flood and damp. To remedy this, about fifty years ago, the floor was raised some 20 in., to the shortening of the Norman piers and injury of the general effect of the interior. It remains to be seen if a drain cannot be carried down the valley, so as to admit of lowering the floor to the old level.

Foord.—On the 3rd ult. Dr. Parry, Bishop-Suffragan of Dover, laid the foundation-stone of a new church at Foord, near Folkestone. The building is being erected under the auspices of the vicar of Christchurch, the Rev. Claude Bosanquet, and is to cost, when ultimately completed, between 7,000*l.* and 8,000*l.* At present, however, it is intended to confine operations to the erection of the nave and one aisle, leaving the transept, vestry, tower, and chancel until a future period. The style is the Early English, and the architect is Mr. Rowland Harcourt. Messrs. R. & D. Baker, of Folkestone, are the builders. The church will be finished in about twelve months.

Dalton.—On the 29th Sept. the new church of St. Michael and All Angels, at Dalton, near Wigan, was consecrated by the Bishop of Chester. The church has been built at the sole expense of Lord Skelmersdale, at a cost of between 5,500*l.* and 6,000*l.* The land for the site and churchyard has been given by Lord Skelmersdale and Mr. J. Prescott, of Dalton Grange. The church, a substantial building, has been erected by Mr. Winward, builder, of Wigan, from the designs of the architect, Mr. Wyatt, of London.

Stonehaven.—The new Episcopal church that has been erected at the west end of Arbuthnott-street, Stonehaven, was opened on the 1st ult. The building has been erected at a cost of over 3,000*l.* The church stands in an east and west direction, parallel with Arbuthnott-street. It is a large building, built of purplish-grey freestone got from the Bervie quarries, some ten miles distant. The style of architecture is Norman, passing into Early English. When fully completed the building will consist of a nave, two aisles, a chancel, tower, and spire. As it stands, the nave and aisles form the building, the chancel, tower, and spire being intended to be built at a future period, when an additional sum shall have been raised to cover the necessary outlay. The length of the nave of the chapel is about 73 ft., and the breadth from side to side of the aisles about 48 ft., while the height from the ground to the apex of the roof is about 40 ft. The spire, which, as designed, will rise to a height of 85 ft., is intended to be built at the north-west corner, next to Arbuthnott-street. At the west end of the church a stained-glass memorial window has been put in by Mrs. Officer, in memory of her son, Alexander Murray Officer, M.D. The window has been designed by the architect of the church, Mr. R. Anderson, Edinburgh.

Sutton Bonnington (*Nottinghamshire*).—The chancel of St. Anne's Church, having been restored, has recently been re-opened by the Bishop of Nottingham. The church is of a simple, interesting character, erected during the Decorated period upon a site about a mile from its present position, and appears to have been rebuilt upon its present site during the Tudor period. The chancel, having recently given way in some places, it was decided to repair, and at the same time to make it more in harmony with the older part of the work. An inspection was made by the architect some months ago, and he found it necessary to erect a new roof and new buttresses to prevent the further spreading of the walls at the top, and to entirely reconstruct the lower part of the walls to the height of about 4 ft. above the floor line. This has been done, together with other works, including floor of encaustic tiles, new oak chancel, stalls, and altar-table, a stone and alabaster screen, and a reredos of white statuary marble and alabaster by Earp. The windows have, for the most part, been fitted with stained glass by Mr. A. L. Moore. The work has been carried out by Mr. H. F. Allen, of Leicester, the architect being Mr. Edwin Dolby, of London.

Dunnington.—Dunnington Church, near York, was re-opened on the 16th ult., after restoration, under the direction of Mr. C. H. Fowler, at a cost of between 1,300*l.* and 1,400*l.* The church is dedicated to St. Nicholas, and previous to its restoration and re-arrangement accommodated about 300 worshippers, but now it can seat a greater number. Mr. John Brown, Lord Mayor's-walk, York, was selected as the sole contractor for the works, and on commencing operations the internal fittings of the church were removed, and the old flooring taken up, and a new one laid down in cement. The chancel floor is paved with encaustic tiles by Mr. Huggins, of York. The chancel roof has been repaired in several places which had gone to decay, and covered in with Staffordshire tiles. The flat ceilings of the aisles have been removed, and the principals and timbers of the roofs exposed to view. The sittings in the nave are open and of pitch pine, and the flooring is composed of wooden blocks laid down in zig-zag pattern. The organ-chamber is occupied by the old instrument, enlarged by Messrs. Walker & Co.

Miscellanea.

Marlborough House.—Recent events have given too much reason to fear that the sanitary condition of Marlborough House was very unsatisfactory. We are glad to learn from the *British Medical Journal* that the drainage has been recently so thoroughly overhauled that all anxiety on the score of bad drainage may now be dismissed. The whole of the basement has been examined, with the result of finding a most discreditable condition of affairs. Old drains and cesspools were found, the existence of which was not even suspected by any person in authority. No one knew what they had been made for, and they had formerly been cut off and were found to be filled with decomposing filth and swarming with rats. Of course they have all been removed, and the ground they occupied has been filled in with concrete. New drains have been put down. All these works have been done by the Board of Works under Mr. Taylor, the chief engineer inspector of the Board. At Sandringham, since the illness of his Royal Highness the Prince of Wales, a special supply of pure water is furnished to the Royal table from two springs on the estate, which, though small, produce very pure water. The house has also been thoroughly ventilated. The drains were examined by Mr. Rawlinson, who removed all the cesspools. The sewage is now to be carried by drains a mile from the house into the park.

An Obelisk for America.—The *New York World* of October 7th, commenting on the departure of Cleopatra's Needle from Alexandria says:—"We are authorised to state that his Highness the Khedive of Egypt has signified his willingness to present to the city of New York, upon a proper application being made to him, the noble obelisk, 70 ft. in height, which now stands 'solitary and alone' near the railway station at Ramlet, at Alexandria, its companion having been accepted by England, and provision made for its transportation thither by a public-spirited Scottish gentleman. And we are further able to say that the enterprising contractors who are now conveying the English obelisk to its destination are prepared to agree to bring the companion monolith from Egypt to America, and to erect it on any site which may be selected for it, at a price not exceeding $100,000, the whole risk of the enterprise being taken by them against a deposit of the sum agreed upon in the hands of some leading American banker."

Dilatoriness of Local Authorities.—Says the *Newcastle Courant*,—"Our local builders are sometimes put out by Town Council regulations, but they are not alone in their distress. The manufacturers Schonfeld, of Herford, have inserted a tablet over the gateway of their new factory, on which is sculptured a highly suggestive inscription. It runs—

'In Memoriam æternam.
Videant Consules ne quid detrimenti capiat Respublica.'

Burned down, March 5, 1876. Permission to build up the factory again requested from the local authorities, June 19, 1876. Permission accorded, November 17, 1876, after a loss of five months. *Suum cuique.*"

Bournemouth Drainage Works.—At a meeting of the Bournemouth Improvement Commissioners, on the 23rd ult., it was decided to have two outfalls for the sewage, each of the outfall pipes to be carried 1,370 ft. into the sea. The tender of Messrs. Lefevre, of London, for 1,370 ft. of 2 ft. 6 in. pipes at 3,447*l.* was accepted. Some apprehension was felt that the sewage would wash back to the shore and prove detrimental to the public health, but the engineer, Sir Joseph Bazalgette, having expressed an opinion that if the sewage was carried 1,200 ft. out to sea there would be no danger of its washing on shore, this scheme was adopted.

Bursting of Water Mains.—Last week the water-main in Buckingham Palace-road, at the head of Brewer-street, burst and caused considerable damage to property in its immediate vicinity. The water was projected to a height of 60 ft., and on falling flooded the basements and shops to a great depth. All traffic was stopped. The accident was reported to the Chelsea Water Supply Company, who are proprietors of the mains in the vicinity, and at once officials were despatched to turn off the supply at Eaton-square and two other stations. A large steam-roller, which is said to weigh 16 tons, had been working during the day within a few yards of the place where the main gave way; and it is stated that new 16 in. pipes were laid by the Chelsea Company at this part of the road six weeks ago. It is not known, however, whether it was the new piping or some other that burst.

Lincoln Archæologists at St. Alban's.—The precentor of Lincoln Cathedral (the Rev. Canon Venables), Sir Gilbert Scott, and other gentlemen have paid a visit to St. Alban's to inspect the recently-discovered remains of the responds of the walls and abbey chapter-house, which was built by Robert de Gorham, who ruled the monastery from 1151 to 1166. The excavations have resulted in the finding of the whole of the north-west corner of the chapter-house, with its Norman responds, sedilia, and exquisite pavement. Notes were taken by Canon Venables of the discoveries, and casts of the mouldings and carvings are to be made before the ground is made good.

Explosions in Mines.—Mr. James Bruce, late 33rd Regiment, writes advising the use of lime water in troughs in all mines, as that has the property of absorbing carbonic acid from all gaseous bodies, and liberating their oxygen. When there is a thick sediment, or precipitate, the lime water must be renewed. Mr. Bruce mentions a contrivance of his own for detecting the presence and height of the "choke-damp," which consists in placing a solution of salt of tartar in tall glass tubes, these tubes being covered with "crystals," as high as the vapour reaches. The tubes must be "open" at the top, and the larger the circumference the better.

Village Water Supply in Derbyshire.—At the last meeting of the Chesterfield Rural Sanitary Authority, the engineer presented a report of a scheme for a new water supply for about twenty villages in East Derbyshire. It is proposed to gather the water from the Moorlands, near Baslow, eight miles from Chesterfield, on the estate of the Duke of Rutland, and to construct a reservoir capable of holding 15,000,000 gallons of water, at a place known as Fox-lane. The estimated cost is 20,000*l.* The clerk was instructed to communicate with the Eckington Waterworks Company with a view to ascertain if they will sell their works, which it is thought desirable should be embodied in the scheme.

The Index Society.—It has been determined to form an Index Society, with the immediate object of compiling subject indexes and indexes of standard books of facts, to be printed and circulated among the members; and with the ultimate object of building up a general index of universal literature, which can be referred to at the office of the society during compilation. It is intended to make the basis broad, so as to include science, art, and literature. Mr. Henry B. Wheatley, 5, Minford-gardens, West Kensington, who acts as hon. sec., will receive names.

Cambridge Surveyorship.—Mr. William John Bowyer, A.R.I.B.A., has been appointed town surveyor of Cambridge, at the invitation of the Urban Sanitary Authority. For fifteen years he assisted Mr. R. Reynolds Rowe, who held the office for nineteen years, and resigned from ill-health in 1869. Mr. Bowyer has since that period often acted as honorary deputy surveyor; it is, therefore, but reasonable to conclude that his local knowledge, and long experience as a subaltern, well qualify him for the post of principal.

The Frauds on the Artisans' Dwellings Company.—The trial of Dr. Baxter Langley, Wm. Swindlehurst, and Edward Saffery, took place last week at the Central Criminal Court, before Mr. Commissioner Kerr. The jury found all the prisoners guilty, but strongly recommended Saffery to mercy. Langley and Swindlehurst were each sentenced to eighteen months' hard labour, and Saffery to twelve months'.

Health, &c., of Kensington.—Dr. T. Orme Dudfield, medical officer of health, says in his last report:—"The deaths were equivalent to an annual rate of 15 per 1,000 persons living, the rate in the whole metropolis being 18·6 per 1,000. The average death-rate in the parish and the metropolis respectively, in the last ten years, was 16·3 and 20·3 per 1,000."

Long Saws.—Mr. Chase has set up at Messrs. Booth & Wheeler's yard, Bankside, Cottrell's diamond hand-saw, for cutting all kinds of building stone (except granite). This machine carries a saw 40 ft. long, over 5 ft. pulleys, and is now cutting York sandstone at the rate of 30 superficial feet an hour.

TENDERS.

For alterations at the Crimean Tavern, Inkerman-road, Kentish-town, for Mr. S. Digby. Mr. J. R. Furniss, architect:—

Warne	£2'8 0 0
Schlater	167 0 0
Dibb	142 10 0
Pestering.	
Grimes	£65 0 0
Warne	59 10 0
Watts	54 18 0

For the erection of two semi-detached houses at New Basford. Mr. Herbert Walker, architect. Quantities supplied by Mr. S. Dutton Walker:—

Bocock	£1,062 0 0
Newham	1,000 0 0
Mosley	940 19 0
Woolf	908 0 0
Middleton	900 0 0
Clarke	898 7 0
S. & J. Cargill	850 0 0
Briggs	835 0 0
Knowles	834 13 0
Doughty	822 15 0
Roberts & Perkins	794 0 0
Butler	792 0 0
Tyers	786 0 0
Lee & Bowmar	776 5 0
Monks & Richer	770 0 0
Dudson (accepted)	735 10 0

For the erection of new schools for 150 children at Sherwood, for the Basford School Board. Messrs. S. Dutton Walker & Herbert Walker, architects:—

Hind	£2,555 0 0
Fish	2,530 0 0
Mosley	2,506 13 6
Jelley	2,471 18 9
Stevenson	2,453 0 0
Bell & Son	2,221 0 0
Vickers	2,190 0 0
Wayte	2,185 0 0
Hodson & Facon	2,156 0 0
Woolf	2,153 12 6
Baines & Turton	2,100 0 0
Doughty	1,993 18 8
Clarke	1,989 12 0
Woodcock & Clayson	1,901 11 0
Stainforth (accepted)	1,777 0 0

For the paving of Church-street and Lincoln-street, Basford, for the Local Board. Mr. Herbert Walker, engineer:—

Smart	£1,836 0 0
Attenborrow	1,730 6 6
Knight	1,722 16 4
Thumbe	1,590 10 0
Cordon	1,489 0 0
Meats Bros. (accepted)	1,442 3 0

For building pair of residences at Leytonstone. Mr. Thorp, architect:—

Knight & Co.	£781 0 0
Knightly	720 0 0
Martin	690 0 0

For additional story to No. 23, Bryanston-square. Mr. E. C. Homer, architect:—

Staines & Son	£297 0 0
Sheffield & Prebble	295 0 0

For house at Holloway. Mr. Paice, architect:—

Parsons	£449 0 0
George	416 0 0

For alterations at No. 77, Tottenham-court-road. Mr. Paice, architect:—

Tadman (accepted)	£250 0 0

For the erection of shop and coach factory, Westow-street, Upper Norwood, for Mr. Joslin. Mr. Edward Foot, architect:—

J. & C. Bowyer	£2,900 0 0
Hobbs	2,750 0 0

For building house and shop, Uxbridge-road, Shepherd's Bush, for Messrs. Hart. Mr. Bean, architect:—

	House.	Extra Shop-front.
Bayes Bros.	£868 0 0	£76 0 0
Bartlett	736 0 0	76 0 0
Johnson	760 0 0	50 10 0
Sacralidge	687 0 0	44 0 0

For building warehouse, stabling, &c., for Mr. Mason:—

Bartlett (accepted)	£794 0 0

For building two houses for Mr. Mason:—

Bartlett (accepted)	£736 0 0

For proposed entrance-lodge and stables at Enfield, for Mr. H. C. Weld. Mr. F. S. Moye, architect:—

Newman & Mann	£1,112 0 0
Fairhead	1,066 0 0
Adamson & Son	1,067 0 0
Longmead & Way	1,010 0 0
Gower	968 0 0
Patman	919 0 0

For proposed alterations at the Gun Tavern, Cole Harbour, Blackwall, for Mr. W. G. Gordon. Messrs. Hills & Fletcher, architects:—

Shurmur	£333 0 0
Johnson	235 0 0
Selby	215 0 0
Alexander	195 0 0
Barber (accepted)	160 0 0

For beerhouse and three shops, High-road, Lewisham. Mr. G. Treacher, architect:—

Gibbon & Mitchell	£2,370 0 0
Batley	2,304 0 0
Perkins & Co.	2,239 0 0
Gill	2,137 0 0

For three warehouses in Jewin-crescent, E.C. Messrs. Ford & Hesketh, architects:—

Scrivener & White	£11,899 0 0
Lawrence	11,774 0 0
Newman & Mann	11,610 0 0
Morter	11,396 0 0
Brass	11,205 0 0
Nightingale	11,273 0 0
Kirk & Randall	10,727 0 0
Shaw	10,701 0 0
Browne & Robinson	10,659 0 0
Down & Co.	10,653 0 0
McLachlan & Sons	10,522 10 0
Conder	10,126 0 0
Perry & Co.	10,091 0 0
Astby Bros.	9,762 0 0

For shop and premises, 10, Hackney-road. Messrs. T. & J. Maples, architects:—

Prout	£872 0 0
Durnford	808 0 0
Ball	797 0 0
Purkiss	737 0 0
Suffield	732 0 0

For house at Stoke Newington, for Messrs. Carter, Paterson, & Co. Mr. William Eve, architect. Quantities supplied:—

Crabb	£850 0 0
Heiser	795 0 0
Salt	683 0 0
Sheffield & Prebble (accepted)	629 0 0

For warehouse at Milner-street, Chelsea, London, for Messrs. Carter, Paterson, & Co. Mr. William Eve, architect. Quantities supplied:—

Crabb	£509 0 0
Nightingale	497 0 0
Heiser	479 0 0
Sweet	425 0 0
Salt	420 0 0
Sheffield & Prebble (accepted)	397 0 0

TO CORRESPONDENTS.

G. D. (under proper advice, the builder of the high wall could doubtless be made to remedy the damage done. Zinc pipes could be used).—F. H. K. (the front of St. Paul's as the site for the Obelisk has been several times proposed. We are not of that way of thinking).—Fairplay (B. has no right on A.'s land).—M. R. (it is beyond our province to supply our correspondent with a design).—J. H. T.—J. R.—T. M.—R. F.—A. J.—H. & F.—R. P.—F. R. L.—R. G. H.—R. W.—H. J. R.—C. H.—H. D. H.—G. H.—J. R.—W. H. O'C.—R. S.—Mr. C.—S.—L. H.—L. S.—K. & Co.—T.—Rev. W. J. L.—G. W. S.—H. H.—R. C. P.—R. R. R.—H. & R. P.—H. & Co.—Alderman M'C.—L. & W.—E. A.—A. H. & Son.—W. W. L.

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